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BORDERLAND STUDIES

MISCELLANEOUS ADDRESSES AND ESSAYS PERTAINING TO
MEDICINE AND THE MEDICAL PROFESSION, AND THEIR
RELATIONS TO GENERAL SCIENCE AND THOUGHT

BY

GEORGE M. GOULD, A.M., M.D.

FORMERLY EDITOR OF "THE MEDICAL NEWS."

PHILADELPHIA
P. BLAKISTON, SON & CO.
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PREFACE

Continued inquiries for many of the Essays contained in this volume, at present out of print, have seemed to justify their republication. To these I have added five not hitherto published, and a number of editorial articles from the *Medical News*, similar in character or object to that of the general collection. For courteous permission to republish I am under obligations to the proprietors of *The Forum*, *The Medical News*, *The Monist*, *The Open Court*, and to the Council of the American Academy of Medicine.

GEORGE M. GOULD.

Philadelphia, April, 1896.

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“VIVISECTION.”*

Recently one of the best scientific men in America said to me, “I would make thousands of animals suffer the most atrocious torments for a thousand years if thereby a human being could be spared one pain.” This was said by one who is a physician, one not himself a vivisector, and one who is a particularly moral and gentle-mannered man. There was, however, a certain peculiar emphasis and even passionateness in his manner when he said this, that betrayed the subconscious feeling that he was exaggerating. It seemed to me a noteworthy and significant utterance.

To this testimony I will add the words of another scientist, also a physician, and also not himself a vivisector:—

In answer to objections against vivisection in public schools this gentleman wrote: “I certainly think that children and every one ought to be familiarized with the sight of blood, the pangs of disease, and the solemn event of dying. Death and pain should not be concealed; they are the greatest of educators, for they teach us the value of life in its highest measure.” (The logical conclusion therefore would seem to be that the more death and pain the better.) These words were *written*, not spoken in the haste of discussion, and were in response to a request for candid, well-considered scientific judgment, to be published for the world’s pondering. To these two many others might be added, but it is unnecessary.

* Delivered at the Meeting of the American Academy of Medicine, at Atlanta, May 2, 1896.

Now I do not, for the moment, aim at any criticism of these statements, nor of the essential truth or error I may think is contained in them. I adduce them and all the *practices* of "vivisection" only as a thesis to be fixed in the mind, and over against which we may now place the antithesis. Without especial quotation, this antithesis consists of the *fact* of large and powerful societies, counting in their membership hundreds of the great names of intellectual and social life,—societies devoted to the total abolition or prohibition of "vivisection." In the antithesis must also be included the fact of laws enacted and proposed for the prohibition, limitation, or governmental control of all scientific experimentation upon animals.

And now let us keep firmly before the attention the uncriticised, unmodified facts,—the thesis of the justification and the practice of unlimited vivisection, on the part of most scientific men, and, on the part of antivivisection societies the antithesis of zealous and organized opposition, more or less successful, to any and all vivisection.

Is it not plain that there must be extremism and exaggeration somewhere? I think wise men have long ago come to the sensible conclusion that truth does not dwell with extremes. Partizanship is not conducive either to learning the absolute truth or to a convenient *modus vivendi*. *In medio tutissimus ibis* is a pretty good old road for comfort, either in intellectual or in any other traveling.

In this connection it readily occurs to you that a *tertium quid* has been omitted from our resume of the situation, and that a large proportion of science-loving minds would not assent to the thesis involved in the statements quoted—whilst an equally high proportion of intelligent laymen would not join the ranks of the total prohibitionists. And this is true, but not so true as might be supposed. Mugwumpery is sadly lacking in this controversy.

I confess, after a somewhat extensive review of the liter-

ature, to a feeling of pitying disgust of both parties in this controversy, and viewing the wild and almost insane hysterics or dogmatic bitterness of both controversialists, one quite despairs, and almost wishes that a sort of Kilkenny-cat battle might leave peace by extermination.

There seems to be a sorry tendency for good people to rush to arms hotly for, or dead against, the other party, and to lose that same self-control and judiciality of disposition which saves us from woful error in all other affairs of life. Sensible people smile at the unsaintly simplicity of one who thinks that all political goodness is covered by one of the meaningless names, democracy or republicanism, whilst thinking that all governmental and legislative deviltry naturally come under the other meaningless word. If this is so in politics is it not much more true, or *should* it not be, of a definite and clear concern of science? It is my purpose to try in a general way to discover some happy middle way, and to ask if we may not lift this unfortunate question out of the silly bitterness and partizanship into which it has fallen. To do so it is plain that we must seek to make clear the truth and the error in the position of each partizan, and thus to unite the good, dispassionate people of both parties in a common cause, and by harmonious methods, make all to work for ends desired of both, and higher perhaps than either alone have heretofore sought.

What is the Truth and Strength of the Antivivisection Party.—Let us now leave out of sight all criticism, just or unjust, all extremism and exaggeration, all sentimentality and nonintellectuality, and seek to learn the essential truth whence the antivivisectionists derive their strength, and which must become at least one of the fundamental principles of the *credo* of sensible people. The secret of wisdom is to learn from your enemy; the true philosopher knows that no controversialist has all the truth or is

wholly in error, that opinion wins credence only by the truth hidden, however deeply, somewhere in it.

It can scarcely be doubted that the primary condition of human progress out of the most utter savagery, consisted in the fact of the primitive man calling to his service and aid the wild beasts about him. This view is brought out with clearness in the most admirable book of Professor Shaler on *Domesticated Animals*. "The process of domestication," he says, "has a far-reaching aspect, a dignity, we may fairly say a grandeur, that few human actions possess. If we can impress this view, it will be certain to awaken men to a larger sense of their responsibility for, and their duty to, the creatures which we have taken from their older natural state into the social order. It will, at the same time, enlarge our conceptions of our own place in the order of the world."

It was by the domestication of wild animals that the savage got his first lift out of lowest barbarism; their food, help, clothing and protection, directly and indirectly enabled one tribe or race to conquer the rival neighbor. It did more:—It helped to found and fix the idea and to establish the fact of home-life, upon which all further progress depended, and upon which civilization itself rests. It did more:—During thousands and perhaps millions of years this daily association with animals drew man out of the bigoted subjectivity which is the great obstacle of all mental development, as objectivity, sympathetic knowing of other beings, is the condition of mental progress. His animals became for man a sort of mirror wherein he saw himself reflected, and from this self-study in others there has gradually and progressively dawned upon humanity a faint and growing recognition of the truth of the unity and interdependence of all life. *Tat tvam asi*, this (animal) art thou, was the grand truth condensed into a sentence epitomizing much of the wisdom of Brahminic civilization.

Forth from the unknown, inexplicable, awful, by the subtle, mysterious agency of cell-life and of sexualism, springs the million-fold, ever renascent forms of living things, each dependent upon all others, just as literally and exactly as in physics or chemistry each particle is interrelated with others. No animal or man can live without the aid of the vegetable, no animal or man without vital relations with other animal forms, no man independent of any or all other men. Each is his brother's keeper, whether the "brother" be the blade of grass, the bacillus, the cow, the savage, or the lawmaker.

Civilization is but just beginning to grow conscious of this fact, but the consciousness has been aroused only by hard knocks. It has taken great disasters of flood and drouth and loss, only to begin to get into our heads the lesson of the stupidity of the denudation of the country of forests. Tuberculosis in cattle is teaching us that the cow is something more than a digesting, milk-giving, and meat-producing mechanism. The value of the product of the domestic hen is greater than that of all our silver mines. The loss of harvests by insects is millions of dollars annually. The death-rate of the human race depends upon our knowledge and control of the laws of lowly forms of life, and when that knowledge and control are perfect we may halve or quarter the mortality.

To this conception, science, reaching always last toward the heart of the mystery, is slowly now groping her way. But the truth is already plain: Commensalism, cosmic commensalism, we may denominate the scientific aspect of the truth of what we have called the unity and interdependence of all the world's life. We are all brothers or cousins and we feed at the same table. There is no truth plainer than this, and disease and dependence are daily convincing us of the existence of the close relationship and of the fatuity of ignoring the rights of all living forms.

Now it is the incomparable merit of the antivivisectionists and their allies that they have first recognized this all-important truth. I agree with you if you dissent saying they have only seen it partially, narrowly, and emotionally, but that is no great criticism after all. They have seen it, dumbly, and partially if you please, but still most vividly. Their rational account of the matter may be faulty and even ridiculous, but the heart always outruns the head, the emotions always point out the objects and motives to the intellect. Animals, all the worlds of living things, have rights *per se*, and the sooner science builds upon that basis the speedier will be the coming of her kingdom. Commensalism is an inexpugnable fact. Utter and reckless use of any living thing for human selfishness, with complete indifference to the nature and rights of that living thing, is as unscientific, as impolitic, and as suicidal as was slavery. It is no great foresight to leave the hive enough honey for it to live upon through the winter. That the honey should be left because we love the bees is also quite as good a motive as because it is good policy or to our selfish interest. Sympathy or sentimentalism, properly understood, seems to me eminently proper and good, and not a reason for contempt or blame. "The great tide of mercy and justice which marks our modern civilization had first to break down the grievous and strongly founded evils of human slavery. Having effected that great work, the sympathetic motives are moving on to a similar conflict with the moral ills which arise from an improper treatment of those slaves of a lower estate, the domesticated animals." (*Shaler*.)

To have recognized even emotionally the fact of Life's commensalism, to have earnestly, personally, vitally recognized the fact of the unity, relationship, and interdependence of all life, to have seen it, however partially and narrowly, but so acutely as to inspire a profoundly sincere and unselfish zeal,—this seems to me the ground and

strength of the antivivisectionist cause. Upon this basis they may safely build, for it is as inevitable as is the fact of evolution itself, that evolution is builded, and will continue its development, upon that principle. Whatever contradicts it will be destroyed, because humanity and science will both unite to work out our destiny in obedience to it. In our upstart egotism, and flushed with scientific success, we have at times so placed and so expressed ourselves as to give the impression that we were not only indifferent to but derisive of this principle and fact, and our vain conceit has been answered by a responsive indignation which has placed in the Antivivisection-lists many of the greatest names of our civilization. If we have but a fool's wisdom we will not repeat this unpardonable error. As protesters, the strength of the antivivisection-protest has been, or has seemed to have been in the denial of what has been, or of what has seemed to have been, a contemptuous ignoring of the unity-idea, an indifference to the rights *per se* of the animal-world, an outrageous hypertrophy of human egotism. Wherever such denial or forgetfulness of commensalism, such non-recognition of animal-right has existed, wherever such inordinate exaggeration of human right has shown itself, the vivisection-protest is valid, and will prove to be valid so long as time and life lasts. It is at once good sense and good science, to acknowledge this, and to build future action upon the acknowledgment.

The Weakness and Errors of Antivivisectionists, are, however, many and patent. They may all be summed up in the one criticism that these good people have not intellectualized their emotions. They have been zealous in the right but so blindly passionate against but one form of wrong, that their zeal has all the attributes of wrong. The emotions are good incentives but poor guides. They need to be rationalized and the way lit up by the sun of intellect. Passions, angers, indignations, need the balance-wheel of

logic to make them keep the world's true time. We gladly acknowledge and fervently contend that, once for all, the sentiment of kindness to animals is an acquirement of modern civilization most profoundly precious and destined to grow brighter, clearer, and more practiced with every step of humanity's advance. Whoever disallows, or derides, or even ignores it, is doomed. Let his name, in the name of science and of humanity, be anathema!

But there are perhaps ten or twenty million barns in the United States with cracks everywhere through which one may put the hand. Has any vivisection-society organized itself to protect the millions of shivering animals who suffer long bitter nights for long winter-months after laboring all day for their careless owners? I would like to join such a society. There are billions of fish and crustacean animals that are killed with slow tortures dragged out for days. Who has protected them from unkindness? In one shipment of cattle from their free, breezy western homes to Eastern or English markets, there is a thousandfold more awful agony than ever was in all the laboratories of all the world. What about the wretched hunting and gaming-business? What about the slaughter-houses? Is death in them preferable to death in a laboratory? No sensible man, good friends, objects to your objection against cruelty in laboratories. Sensible people will aid you to stop laboratory-cruelty, but sensible people will ask you to extend the realm of your activity to other and to all places where cruelty exists, and to expend your main force where it is most needed. At present you are open to the charge that you care for but one kind of cruelty and that a small order. Do you want to educate the world in kindness? Then by all odds do so by going to the millions who are ignorantly and continuously unkind, not only to the few dozen whom you have selected. Is it cruelty you protest against, or is it only the cruelty of a certain small class of men?

Another crying error of antivivisectionists is calling death vivisection. Some time ago a most sensational account, with roaring headlines and awful pictures, was published in a New York newspaper of the vivisection atrocities carried on in the Physiologic Department of Cornell University. To call the cutting up of meat in a butcher-shop vivisection, and to have aroused indignation against the poor butcher by headlines and pictures, would have been just as honest and true. For the truth is that in this University there has not been a single painful experiment since it opened. Perhaps five hundred dead animals are there annually dissected, but only after a most humane and painless death. Now this instance is only illustrative of the general habit of antivivisectionists of charging those who kill animals for scientific purposes with cruelty and "vivisection." At the same time against death in slaughter-houses, by fish-dealers, hunters etc., there is no charge made, and no blame is laid upon them. This is an unfortunate condition of mind. Scientific men may justly claim that to those who ruthlessly hunt animals for sport and thus produce directly and indirectly a terrible amount of suffering, should at least be meted out a hatred and denunciation as fervid as against those who use them unselfishly in the service of humanity and science. Not to have done this, to have been guilty of this blind injustice, will ever remain the shame and weakness of the antivivisection movement. I have yet to learn that indignation against one kind of cruelty rightly absolves a just conscience from the obligation of truthfulness and sincerity.

Indeed this principle deserves extension; until antivivisectionists become practical vegetarians, they are at present occupying a shameful and stultifying position. By "the total prohibition of vivisection" they mean and represent among other things the abolition of death in the laboratory. But of course simple death in the laboratory and that in

the slaughter-house or fish-boat must alike be justified by the objects and methods of the death. In the one case it is for the good of science, the conquering of disease, and the life of humanity. In the other it is to feed the single body of the eater of meat. The illogic and ludicrous position of the meat-eating prohibitional vivisectionist is thus worthy of the limitless contempt of rational beings.

It thus becomes clear that the problem of the whole controversy widens itself out into the greater problem of the use of the animal-world as food. When the prohibitionist becomes a vegetarian, he is worthy of respect as a logical person, but while he still eats meat, utterly indifferent to the death or kind of death his animal endured, and passionately indignant against vivisectionists, he becomes a very silly butt of ridicule. The antivivisectionist must therefore straighten out this tangle and make theory and practice tally, before he is worth the consideration of reasonable people.

In order to be clear and not to evade any issue, I may add that personally I object to doing my own butchering. I would rather be a vegetarian, although I am not so silly as to seek to avoid my moral responsibility for the death I order with my cutlet. Butchering for mere sport's sake, called "hunting," seems to me to touch a lower depth of degradation, to which I trust never to fall. Trap-shooting and senatorial gunning are of course unspeakably low. Indeed, the practice of vegetarianism would seem to be defeative of the very object it has in view. I think we eat too much meat, that we are too indifferent to the animal right, careless of the manner of death, etc., etc., but total prohibition here would not only slow down the march of humanity's progress, but it would be sadly detrimental to animalian progress. As a matter of fact it has not been human hunger or appetite that in an appalling manner is exterminating whole species and genera of animals from

the face of the earth, but it is the outrageous fury of the hunter and of female vanity. Under proper restrictions and laws the use of animals as food has served, and may still further serve to perfect and beautify the animal world. Death alone, uncruel death, for a useful purpose, least of all that in the laboratory, threatens no animal genus with extinction, and in all our facing of the question, we need only to keep in mind the object, the extent, and the method, of our death-dealing. But while we have a ray of reason or a line of logic in our minds, we must protest against the antivivisectionist confusion, illogicality, and even misrepresentation, that stigmatizes laboratory-killing as vivisection, whilst innocently dining upon the products of the slaughter-house; that would prohibit painless laboratory-experiment, and laboratory-killing, while obviously passing a restaurant-window, or a train of stock-cars.*

Again, antivivisectionists weaken their own cause, lessen the number of their sensible adherents, and do violence to their own sense of truth by their intolerable denial of any least good whatsoever gained by and through vivisection. Now even in a good cause untruth does not pay. I regret that I have not the space and time at present to adduce a few examples out of hundreds that might easily be given to show how erroneous is this dogmatism. The proofs have often been gathered and it is unnecessary to repeat the time-worn story. Thousands of children, for example, are to-day growing to manhood and womanhood who would have died without the diphtheria-antitoxin. (But both sides to the controversy forget that the negative results, the showings that, except to the dispassionate investigator, are never shown, are quite as important in a

* See a series of excellent articles by J. Lawrence-Hamilton, M.R.C.S., on Torturing and Starving Fish, Catching and "Crimping" Fish, etc., in *The Lancet* of August 17, August 31, et seq., 1889.

scientific sense as the positive rewards of experimental medicine.) In reading these tiresome reiterations of dogmatism and denial, in witnessing the repetitions year in and out of this eyeless prejudice, one feels like despairing of the sincerity and sanity of the human mind. I perfectly agree that vivisection-experimentation has often been resultless, and worse than resultless,—the great men of science, the great vivisectors themselves freely admit it—but to contend that every such experiment has led either to resultlessness or even to error,—this only could a heated controversialist bring himself to say. The least investigation of the facts, and the least impartiality of judgment would insure against such blundering.

Yet another way in which the antivivisectionists should intellectualize their emotions consists in their neglected duty to be just to the laboratory-men. Almost every line they indite, or word they utter, betrays a deep vindictiveness, a bitterness of suspicion and hatred, that is,—well, let us say pitiable! But what is the truth? Are these men seeking selfish aims? Are they brutish in their social or family life? Are they liars about other things (than this controversial one)? Is the medical profession the most selfish, or in truth the most unselfish, aye, the most ludicrously charitable, of all the professions? Are men who devote themselves to humanitarian, impersonal, and scientific ends in other callings as well as in this, likely to be fiendish and cruel? I frankly admit that some vivisectionists are selfish, scheming, despicable fellows—but are they *all* so? Are not some of the antis also baddish folk? Is it truthful or judicial to condemn all men of a party or class? To your shame we ask, Who carry on, payless, the terrible labors of the hospitals of the world? Who have reduced the death-rate of your civilization, and increased the average length of human life by some years? In whose hands to-day is lodged the hope of ultimate freedom from

disease, and its thousand resultant ills? Who or what class of men in all the weary world is bending its heroic endeavors so zealously and so fearlessly to lessening the world's miseries? Who in fact and finally is doing as much to lessen disease and suffering in the animals you blindly love, as these same physicians who know as you do not know, that disease in animal and man is the same? To your everlasting shame it is that you hate and oppose them instead of aiding them. Love your lovable animals wisely, not childishly, love them *more*, and you will work with us and not against us! If you can't enlarge your intellect, at least enlarge your heart, and learn of vivisectionists how to make your animals healthy! Who "crop" your dog's ears and "worm" his tail, and "cadoganize," bit, and blinker, your horses? Is it the laboratory-man? Ah no! It is Fashion, which you are all too careful not to antagonize, and which delights to do its charity very vicariously!

All of which leads to a linked corollary,—the question whether, by pushing a truth to its most reckless extreme, you are not allying yourself with the forces that are antagonistic to civilization? I have admitted that the unity of all life, and by implication the care by human intelligence of all lower life, is a fundamental principle that must henceforth guide all true biologic progress. I have admitted that yours is the great honor of having, at least in part, recognized this, and of having set yourselves to its practical realization. But the criticism has swiftly and necessarily followed, that you have taken your duty too narrowly. To love one dog or one horse, to the exclusion or to the indifference of all other dogs and horses; to love animals rather than the animal kingdom, and to love the animal kingdom rather than humanity,—what shall we call this but childishness?

Or is it something else not so innocent as childishness?

Have you ever calmly asked yourself how much of the antivivisection-cry is but the concealed expression of Science-hatred? I am not quite sure but that the "cry" is often the masked growl of defeated bigotry and superstition filled with hereditary hatred of clear-eyed and conquering Science, swiftly marching from victory to victory and ejecting from the last hiding-places of obstinate and backward-looking minds their beloved errors, their cherished ignorances, and their pleasant selfishnesses. Without some such an explanation, it is otherwise difficult to account for the bitterness, the misrepresentation, the amazing celerity with which any club is grabbed, and the blind fury with which it is wielded. A too passionate partizanship argues the existence of unconfessed motives. If pure pity of suffering animals were the sole sentiment inspiring some of these pamphlets, it could hardly be so unmindful of the awful suffering endured elsewhere than in laboratories. But this is an unpleasant and gruesome aspect; let us pass on to consider the other side of the question.

The Truth and Strength of the Vivisectionist Cause, as all scientific men know, lies in the application of inductive methods of research to the solution of the mysteries of normal and morbid physiology. To those who are untroubled by these mysteries, to those careless of the awful burden of disease, its expense to biologic evolution and civilization, to those also who are either ignorant of or opposed to the inductive method of research, to all such, of course, all experimental investigation is valueless. But every mind which has once realized the tremendous importance of science to humanity, recognizes with ever-growing gladness, the profound usefulness of induction in bringing light into the intolerable mystery of our life here. Induction, as we all know, is reasoning from facts to principles and laws. For thousands of years the sense of the mystery surrounding us, in us, and of us, has with the com-

mon people found satisfaction in faith or religion, which, scientifically speaking, is often the voice of despair, and is always the cry of renunciation of intellectual solution. During the same cycles the educated or more original minds sought the solution of the mystery of being in deduction, *i. e.*, metaphysics and speculation. They never looked inquiringly at the causes and realities of the motions of the planets, sun, and stars. They never observed the stratified rocks on which they walked. They never asked the cause of glandular action, never sought the origin of disease. The awful pageantry of the biologic process swept on before their eyes like a dream, and they were utterly oblivious of the strange mystery of themselves, of their bodies, instincts, sensations, and minds. They spent their lives in vain quibbles as to matter, mind, free-will, God, angels, nominalism, realism,—in everlasting delving and in discussion about things in the abstract. Finally, one man after another appeared who said: Let us for once observe things in the concrete, let us observe facts closely and accurately and by linked logic proceed from single facts to groups, and to ever-inclusive groupings and classifications, until finally in this way law gleamed upon the eyes of mankind, order arose out of chaos, and with her splendid certainties and clearness was born Modern Science! Almost any single page of a recent text-book on chemistry, physiology, or therapeutics, is worth to humanity the entire inclusive product of metaphysics, and theology, and philosophy, from Plato to Hegel.

It will, I think, appear, that I am by no means blind to the errors and hypertrophies and limitations of the method of induction, but in the minds of all awakened men, that it is the most potent instrument in the discovery of truth, there is no sort of doubt whatever. Now so far as physiology and medicine are concerned, the inductive method based in part on vivisection is one of the more,—mind I do

not even say *the most*—but one of the more important conditions of scientific accuracy and progress. Reasoning from facts is impossible until the facts are known, and in the exceptional difficulty of learning the facts of normal and morbid bodily function, vivisection constitutes an important method of procedure. There is no blinking this truth, and the opponents of justifiable or proper vivisection must either acknowledge it or else take their places as opponents of science and of humanitarian progress. Every person who without prejudice has looked into the matter must well know that without vivisection a large part of the great body of physiologic and therapeutic truth of which we are now in possession would not have existed, the death-rate would have been far higher than it now is, and our civilization would not have been nearly so far advanced as it is. It is useless for me to catalogue the facts upon which this assertion rests. They who deny either the assertion or the facts do not know whereof they speak, or they do not wish to know.

Just here, parenthetically, is suggested a strong condemnatory criticism of the prohibitional antivivisectionist, —a criticism that shows him (or her !) to be *de facto*, a deductionist, and not an inductionist. Not one of them has ever spent ten hours in a laboratory, not one has made a scientific discovery. In other words, he (or she) has opinions of a very pronounced sort, about matters without inquiry and study and without first-hand observation of the facts. Like the Scotch judge, having heard one side, he has made up his mind, and does not wish to become prejudiced by hearing the defendant's attorney. No more convincing proof is necessary of the vice of deductive reasoning !

I could enumerate a number of other facts to the credit of the experimental school of medicine, but the single one mentioned is sufficient to place it infallibly upon the right

side in humanity's long warfare against ignorance and disease. It will be more instructive therefore if we proceed at once to note:—

The Limitations and Errors of the Vivisectionists.—The first that strikes one is an exaggeration of the importance and extent of the vivisection-method. As valuable an aid as it is, it is not the only, and perhaps it is not the chief method of ascertaining medical truth. It has without doubt, often been used when other methods would have been productive of more certain results. This has arisen from what a large and broad culture of the human mind perceives to flow from a recent and rather silly hypertrophy of the scientific method, and a limitation of that method to altogether too material or physical aspects of the problem. It may be true that so far as we see every mental or biologic fact has its material counterpart. More than this may be admitted: It is the especial province of Science, to make sure of this physical aspect. But over against these admissions must be placed the unscientific bigotry, the unwarrantable dogmatism of the prejudice,—nay of the untruth, that the *life* or *psyche* is wholly and absolutely explainable in terms of matter and mechanics.* Truly scientific men have not been guilty of this wretched travesty of truth, but certain plebificators of science who

* **An Argument for Human Vivisection.**—A writer in a Western journal makes a vigorous plea that criminals condemned to death should be first used for vivisection purposes, and especially in the study of cerebral localization and function. One argument adduced is exquisitely humorous, the humor being heightened by the innocent unconsciousness of the quality. The earnest writer thus argues:—

"Those who would be unfavorably impressed with this method of investigation should take kindly to the information that experiments of this kind on the brain are no more unpleasant to the subject than like impressions aroused during the sojourn of perfect liberty. There is every reason to believe that the stimulus in a large number of instances would be highly pleasing. If, for example, our subject experimented upon was a person who had been repeatedly animated by the ludicrous, upon touching the seat of such impressions the

have caught the public ear have harped upon it until they have almost made the judge of us all—enlightened public opinion—believe this is the genuine attitude of Science. It is a fatuous and a bitter error, and the best scientific minds, having suffered by the misrepresentation are making haste to disallow the impertinents, and to set the world right as to the true status of the matter. It has been the habit of some to sneer at the so-called "vitalists," asserting with reckless derision that thought is a secretion of the brain, and life a property of matter. Except from a few we have probably heard the last of such teaching. It may be a truth, but until it is so proved scientific minds will not assert it. So long as spontaneous generation is a foolish untruth, so long as *omne vivum ex vivo* is disproved by no single fact in the world, so long must the ranters and dogmatists at least keep silence in the presence of logical and educated minds.

But, as I have said, the influence of the dogmatists has been too much in evidence in science and especially in vivisection-practice. "It is," says Professor Mosso, the biographer of the great Ludwig, "an error, to believe that experiments can be performed upon an animal that feels. The perturbation induced by pain in the functions of the organism is so profound as to render useless the experimenter's study. It was Ludwig who uttered the celebrated *mot*, that some physiologists, to study the nervous system

whole circumstance would be reproduced, attended with the same vivacity as the original experience. Painful sensations would not be reproduced unless a certain nucleus of cells was stimulated, and this could be avoided after its exact location was ascertained. To secure cooperation and carry out the operation successfully the condemned would be instructed with the nature of the work."

The childlike conviction that "the ludicrous" and that "pain" have definitely localizable centers, and that all one would have to do in order to spend a life in laughter would be to tickle the ludicrous-center with a galvanic needle, is itself one of the most painfully ludicrous conceptions of pseudo-science that we have ever met.—*Med. News*, December 16, 1893.

act like one who fires a pistol into a watch to see how the chronometer works. Suffering should be entirely eliminated from physiologic experiment, because the instruments we employ to-day are so delicate that they become inservicable the moment the animal is agitated or moves."

This admirable quotation perhaps leaves out of the count certain experiments that require more or less long-continued suffering, and in which anesthesia would be impossible, but in the main it is a truth that has been too much neglected on the part of vivisectors.

I need not weary you with other similar errors, but pass to another exaggeration, the over-emphasis of vivisection-experiment and the neglect of clinical and pathologic results. The pathologic fact is a vivisection-experiment of the very best kind and admirably conducted by nature. We should trust it whenever possible, and not only the far more bunglesome and uncertain one of artifice. Among very many examples that might be cited, I shall give but one. Dr. Seguin, of New York, it will hardly be disputed, is a competent judge in the matter alluded to in the following quotation :—

"Horsley appears to assume that our progress in cerebral localization has been mainly dependent upon experimentation. Here again we must differ from him. Clinical observation and pathologic data come first (Broca for speech-center, Hughlings-Jackson for a hand-center and general doctrine), the animal experiments with detailed proofs by Hitzig, Ferrier, and others long after; and the solid facts upon which we make our daily localization diagnoses have been patiently accumulated by pathologists, and would stand to-day supporting the doctrine of cerebral localization if not one animal's brain had been touched. Besides, in the case of the visual half-center, human pathologic facts have overthrown the result of experimentation (Ferrier's angular gyrus center), and have made us, for practical purposes, indifferent to the contradictory results of Munk and Goltz. It

is safe to say that every one of the so-called 'centers' in the human brain have been determined empirically by postmortem proofs, independently of experimental data. What animal experiments would have led us, for example, to locate the half-center for ordinary vision in the cuneus, the center for the leg in the paracentral lobule, and that for audited language in the left first temporal gyrus? In this department of pathology medical science has been strictly inductive and sufficient unto itself, though receiving confirmatory evidence from the physiologist. The first (speech) and the last (visual) centers have been discovered by clinical and pathologic studies.*

Almost every point over which the controversy has raged most fiercely has been in relation to one or all of the three or four questions:—

1. What is a vivisection experiment?
2. By whom should it be performed?

* That this is not a solitary opinion may be gathered from the following (unverified) quotations I have found. I do not assent to them either as true or complete statements of the facts, and especially of later and properly-conducted experimentation. I quote only to show that there are two sides to the question, and the doubtful value of improperly-chosen or improperly-conducted experimentation:—

"In surgery I am not aware of any of these experiments on the lower animals having led to the mitigation of pain or to improvement as regards surgical details."—(Sir William Fergusson.)

"No single operation in surgery has been initiated by the performance of something like it on the lower animals."—(Sir William Fergusson.)

"All systems based on vivisection are false and 'illusory.'"—(Nélaton.)

"Vivisection has done more to perpetuate error than to enforce the just views taken from anatomy and the natural sciences."—(Sir Charles Bell.)

"Vivisection has not only not helped the surgeon one bit, but has often led him astray."—(Lawson Tait.)

"The teachings of vivisection on the functions of the brain are a tissue of error, and can only be corrected by clinical observations."—(Brown-Séquard.)

"Confusion is the scourge of science, and it is the most striking result of vivisection."—(Sir Charles Bell.)

Majendie said "No physician would think of calling to his bedside a doctor who derived his knowledge from a source so liable to error as vivisection."

3. For what purpose should it be performed ?

4. By what method should it be carried out ?

In reference to all of these questions, scientific men should unite and establish a common set of principles or answers. In my judgment their failure to do so at all, and besides this, their frequent exaggeration of logical limits and just claims, has been one of the unfortunate causes of useless and wasteful wrangling.

1. They have not taught their opponents or the community : 1. What a vivisection-experiment is ; 2. How very little of such experimentation there is ; 3. How little pain or suffering there is attendant upon properly chosen and properly conducted experimentation. They have, for example, allowed the roar of controversial anger to go unrebuked that confuses death and vivisection. Dissection of dead animals is not vivisection, of course, and at that one stroke there falls to the ground at least three-fourths of the present antagonism and prejudice. The vast majority of all animals now used in experimental study are dead animals. Again, if death at once follow experimentation that has been painless, another large cause of unjust censure falls pointless. Once more, if anesthesia prevents all the pain of what would otherwise be painful experiment, sensible people cannot object to that, and thus another large excision is taken from the few remaining cases. As we all know, but little painfulness or suffering attends the vastly great majority of so-called vivisections. When experiment upon a dead animal is meant do not let us permit the word vivisection to be used. It is simply dissection or mortisection, if you please. If butchers are not to be prosecuted or martyred, certainly scientific men may be permitted to carry out studies upon the dead animal. For the rest, why not adopt Professor Wilder's words : *callisection* when painless vivisection is meant, and *sentisection*, when it is painful ?

2. I believe scientific men have made a grave mistake in

opposing the limitation of vivisection (*not* mortisection) experimentation to those fitted by education and position to properly choose, and properly execute such experiments. No harm can come, and I believe much good would come from our perfect readiness to accede to, nay, to advocate the antivivisection desire to limit all experimentation to chartered institutions, or to such private investigators as might be selected by a properly chosen authority. This limitation of course should be conditioned upon the absolute freedom of (comparatively) painless killing by whoever may please to kill, or else the hunters, fishers, slaughter-house men, and a hundred other killers of bed-bugs, grasshoppers, etc., would have to be included, and then the world would roar its laughter! Mayn't we vivisect tapeworms and pediculi?

At present the greatest harm is done true science by men who conduct experiments without preliminary knowledge to choose, without judgment to carry out, without true scientific training or method, and only in the interest of vanity. It takes a deal of true science and patience to neutralize with good and to wash out of the memory the sickening, goading sense of shame that follows the knowledge that in the name of science a man could from a height of 25 feet drop 125 dogs upon the nates (the spine forming a perpendicular line to this point), and for from 41 to 100 days observe the results until slow death ended the animals' misery. While we have such things to answer for, our withers are surely not unwrung, and in the interest of science, if not from other motives, we have a right to decide who shall be privileged to do them.

I have adduced this single American experiment, but purposely refrain from even mentioning the horrors of European laboratories. This is not because I would avoid putting blame where it belongs, but because such things are peculiarly prone to arouse violent language and passion,

clouding the intellect and making almost impossible a desirable judicial attitude of mind. The Teutonic race is to be congratulated that it is guilty of at least but few examples of the atrocities that have stained the history of Latin vivisection, and before which, as before the records of Roman Conquest and Slavery, or of the "Holy Inquisition," one shudders at the possibilities of mental action, in beings that bore the human form and feature. Shaler contends that it was the domestication of animals that enabled the Aryan and Teuton to conquer his adversary, and that has since civilized the conqueror. Thus long friendship with animals has given us a freedom from guilt that is fortunate for Teutonic peoples and science.

Vivisection is out of place in the public schools. In the interests of pedagogy, as well for the benefit of the pupil's morality as for the promotion of true science, scientific men should oppose with a common voice any such caricature and subversion of their aims and methods. Children should *not*, of all things in the world, "be familiarized with the sight of blood, etc., etc." *

* **Antivivisection for Children.**—It strikes us that of all men physicians should be foremost and most emphatic in their denunciation of vivisection in the public schools or in any schools except those for adults and those especially devoting themselves to medical or biologic science. The matter would hardly seem to need argumentation. Every right-minded person must know, and doubtless must painfully remember in his own case, how callous children are to suffering and even how verily diabolic they often are as tormentors of animals over which they have power. It would also seem perfectly plain that the practice of vivisection before or by such highly imitative beings would have one certain effect: to increase enormously the already thoughtlessly or consciously cruel tendencies of their natures. "Appetite grows by eating." In medieval times the great gala days were the days of *auto da fe*. Gay cavaliers and gay ladies flirted and laughed for hours before men slowly being burned to death. They were no more intentionally or really cruel than boys to-day who pour coal-oil over dogs and burn them to death.

Would vivisection in public schools have other effects more than compensatory for the evil? Clearly and decidedly not. In the first place, dissection

3. The true object, the principal if not the only one, of vivisection, should be the eliciting of new truth. To this end also, any one may sacrifice by painless death as many animals as he pleases, so long—a most remote possibility—as the extermination of no species is threatened. Shall it not be as right to kill rabbits for scientific purposes, as for sport, or to rid the harassed Australian farmer of the pests? We must ever insist on this distinction between use of the dead animal and true vivisection. One may painlessly kill animals also in order by further experiment to acquire manipulative or surgical skill, and for didactic purposes, in medical or scientific schools. Death of plentiful and prolific animals, is *per se* no evil, and cannot be legislated against or morally forbidden; and the same rule will hold as regards all callisection, or painless vivisection. But I believe that the most enlightened judgment and feeling of the world will not justify much or any severe sentisection (painful vivisection) for didactic purposes or for the acquirement of operative technic. In the interests of science, again, as well as of morality, scientific men should set their faces sternly against such things.

and anatomy and the advanced physiology to be gained by vivisection are not fit studies for the child-mind, but are plainly adapted and adaptable only to a maturer age, and for those preparing to become physicians or specialists. The child-mind by its very nature is not analytic, and any attempt to force it into analytic studies before a riper season, is squarely contrary to pedagogic science. It is not only against the child's nature and bound to prove unsuccessful, but, if possible, it would not be desirable. We need to teach the young mind the beauty of life, not the analysis of death. In educational methods we are at last fairly emerging from the barbarism of the study of dead things by dead methods and by dead-alive teachers. Do not let us encourage any such reversion to the barbarism of medievalism, as turning the kindergarten, that divine promise of a future civilization, into a miniature dissection-room or laboratory for experimental physiology. Moreover, in the interests of physiology, of medicine, and of science itself, we should protest against such physiology as would be taught in the public schools by the present day (or promised) school-teacher.—*Med. News*, August 17, 1895.

4. The proper method of using animals for experimental purposes should combine scientific seriousness and rigor with the tenderest kindness to the animals. There is a subtle and beautiful law of psychology that only the unity of right object and careful method is productive of good results. Matter and manner must go hand in hand. Morality is a part of intellect, and a large part. When you see a vivisector pretending to be scientific, but whose every act and word indicates brutality to his fellow men, the politician, the selfish schemer, vulgarity of mind and banality of manner, rest assured his laboratory-experiment is vitiated with falsehood and error, and scientifically is utterly valueless. To jeer at and deride "sentimentality" while pretending to be working for the good of humanity (a sentiment, if ever there was one!) is hypocritic and flagrant self-contradiction. This attitude of mind on the part of a few men does more to arouse the indignation of opponents than any cruelty itself. Scientific men should root out of their ranks such poor representatives. They are enemies in the scientific household. Dr. Klein, a physiologist, before the Royal Commission testified that he had no regard at all for the sufferings of the animals he used, and never used anesthetics except for didactic purposes, unless necessary for his own convenience, and that he had no time for thinking what the animal would feel or suffer. It may be denied, but I am certain a few American experimenters feel the same way and act in accordance with their feelings. But they are not by any means the majority, and they must not only be silenced, but their useless and unscientific work should be stopped. They are a disgrace both to science and humanity. Over against Klein and those of his way of feeling let us set the example of the great Ludwig, he who has done more for physiology than a thousand Kleins, he whose influence for scientific truth has been the greatest of any physiologist in Europe.

"No physiologist," says his biographer, "has ever sought with greater frankness than Ludwig to impose just limits on vivisection. The gates of his institute were ever open to all who wished to assure themselves that he, in the midst of his experiments, knew how to spare suffering. The vivisector's art attained such perfection in his hands that, having to sacrifice an animal, he did not let it feel that it was even being tied. He would apply the muzzle and instantly proceed to the exhibition of ether or chloroform, which, in a few seconds, in a dog, for example, made it insensible."

In America we have one great anatomist the circles of whose scientific beneficence are ever widening and deepening, who acts as did Ludwig. No man ever had a more sympathetic and tender regard for all lower life than he. His cat-home is a marvel of ingenuity and kind carefulness, over which hangs the motto—

"Snugly housed and fully fed,
Happy living and useful dead."

By this man not a single painful experiment is found necessary to illustrate his physiologic teachings, although some five hundred or more animals are annually killed with perfect painlessness. His laboratories and homes of animals are always open to inspection, gladly, proudly exhibited, and if you want a pet he will give you your choice out of an extensive collection.

And this brings me to what I can but conceive as a grave and profound mistake on the part of the experimentalists,—their secrecy. I well know that bigotry and prejudice may misrepresent. The whole history of the cycle-long struggle of the medical profession to obtain human dissection-material in the study of anatomy shows that the public mind has been hard to win over from its repugnance to the use of the dead human body for educa-

tion in anatomy. But that day is now nearly or quite past, and the policy of secrecy is to be replaced by one of the most complete frankness and openness. In his recent presidential address, Dr. Thomas Dwight of the Harvard Medical School said:—

"From careful observation I am convinced that the policy which will lead to the most satisfactory results is one of complete openness; that above all, we should avoid a timidity which shirks discussion of this topic. When we shall show so clearly as to carry conviction, that we have nothing to conceal, a great step will have been taken. I like to boast that the anatomical department of the Harvard Medical School is ready to give an account of every body it receives. If there be aught in the management of dissecting rooms that calls for criticism, I would not have reform forced upon us from without. Let us be the first to anticipate every reasonable demand."

It is precisely in this spirit that the experimental school of medicine should meet the antivivisectionists and the world. A truly scientific man is necessarily a humane man, and there will be nothing to conceal from the public gaze of anything that goes on in his laboratory. It is a mistake to think our work cannot bear the criticism of such enlightened public sentiment as exists here and now; if there is necessary secrecy there is wrong. People generally are not such poor judges as all that. The openness will at one stroke eliminate the pseudoscientists and greatly calm the overwrought and erroneous public apprehension. I would even go further: Every laboratory should publish an annual statement setting forth plainly the number and kind of experiments, the objects aimed at, and most definitely the methods of conducting them. At present the public somewhat ludicrously but sincerely enough grossly exaggerates the amount and the character of this work, and by our foolish secrecy we feed the flame of their passionate error. An organized system-

matic and absolute frankness, besides self-benefit, would at once, as it were, take the wind out of our opponents' sails. Do not also let us have "reform forced upon us from without," in this contention, but by going more than half way to meet them, by the sincerest publicity, show that as well as scientists and lovers of men we are also genuine lovers of animals. Faith, hope, and love,—these three! To faith in knowledge, to hope of lessening human evil, we add love—love of men, and of the beautiful living mechanisms of animal-bodies placed in our care. He who unnecessarily hurts one of these, is a disgrace to science and to humanity.

As it appears to me this most unfortunate controversy, filled with bitterness, misrepresentation, and exaggeration, is utterly unnecessary. Both of the sharply-divided hate-filled parties are at heart, if they but knew it, agreed upon essentials, and furiously warring over nonessentials and errors. I frankly confess that one side is about as much at fault as the other, and that the whole wretched business is a sad commentary upon the poverty of common charity and good sense. There have been far more passion, shrieking, grunting, and growling than becomes rational beings. The only comforting thing in it all is the righteous conviction of everybody concerned that at heart it is an awfully serious and important concern. But this hardly justifies either hysteric falsetto or leonine roaring. When good women call good men devils, and good men retort Liars!—it commences to get disgusting or ludicrously opera bouffe. Cannot we ignore the ranters and extremists of both parties, behave like decent folk, get together, strike a balance sheet of our common follies and common excellencies, and find that at last we are very much alike, and indeed, have no real quarrel? Of course scientists can have nothing to do with those who cry no quarter! But the advocate of the total prohibition of vivisection can be brought to see the error of his (or her) ways, or can be

cheerfully allowed to go those ways with the amused pity of all sensible people. For the rest there is by no means an infinite and unbridgeable chasm separating the two parties. Every good scientist is as much interested in promoting kindness to animals as the most devoted member of S. P. C. A., and I would add that it is his duty to join such organizations and help to carry on their proper work. Possibly he may serve to intellectualize that work somewhat and make it more effective. Pardon me for again alluding to Ludwig, the grèat scientist, the greatest of vivisectors, and one of the greatest lovers of animals. It will doubtless surprise some extremists to be told that a vivisector can be as great a protector of animals from cruelty as the best of them, and the sting of the surprise and incredulity comes from the sad confession that it is much of it our own fault. But "Ludwig was President of the Leipsic Society for the Protection of Animals, and remained to the last one of its most active members. Germany owes it to him that her horses and beasts of burden are now humanely treated. To him is due that awakening of the true humanitarian spirit toward the brute creation that culminated in the 'Verband der Thierschutz-vereine des Deutschen Reichs' (Union of German Societies for the Protection of Animals). It was mainly from her sense of the gentler attitude to be encouraged toward animals on the part of the rising generation that Leipsic made him an honorary citizen on the fiftieth anniversary of his graduation in medicine." Can we not, shall we not, rise to the easily-attained height of a similar dignity and magnanimity? Let us have peace!

Perhaps it may not be possible to unite the two parties in a common cause. The earlier sins and mistakes of a good man are likely to cling to him like a Nessus-shirt, and bar his later progress. Most men would rather be consistent than to be right. If it is really impossible to get

the experimentalists and the antivivisectionists to cancel their mutual errors and exaggerations—the things wherein they disagree—and unite in a common propagandism of their mutual truths and beliefs,—if this desirable and right ideal is impossible, then it is time to form a new order or society aiming to correct the errors of both parties, generalize and systematize the essential purposes of both, and—more important still—to extend its field of labor beyond the present narrow confines and limited range.

I wish there might be an International Biologic League formed for the general protection and safeguarding of animals and plants from cruelty and destruction. Human progress and civilization have united at last to put into our hands the care and destiny of all lower forms of life upon the globe. The ingenuity, prolificity, and restlessness of humanity have at last brought man into destructive contact with every order of lower life, and with a more than savage stupidity he has begun a suicidal and impious extermination of many types. Once gone these are forever gone, and a large culture can only feel genuine anguish at such a terrible end as seems threatened. It is time some such organization of biologists should undertake to extend theegis of human care over the fate of our cosmic life, and secure from all governments such laws as shall prevent the ruinous destruction of infinitely beautiful and valuable types. Already many species of birds have disappeared in historic times, and our barbaric milliners and their thoughtless customers are still furiously at their frightful work. One dealer last year sold 2,000,000 bird-skins. The world's most wonderful and intelligent animal, the elephant, is doomed, 100,000 a year being slaughtered to provide billiard balls, every pound of ivory costing also a human life. Our buffaloes and moose are about gone, and the seals are soon to go, with many wonderful inhabitants of the earth's waters. Future scientists will look back at us

of to-day aghast at our blindness and heedlessness. Some gleams and hints of prudence exist, as for example, the forbidding of hunting in our national parks, our Government Fish Commission, etc., but how far is all this from a generalized and international system, that should prepare universal laws and plans for biologic Retreats or Sanctuaries, that should protect the head-waters of our rivers from deforestation, and prevent them from being made foul sewers, that should guard against upsetting the delicate balance between animal and vegetable life, imminently threatened by the thoughtlessness, brutality, and avarice of destructive man. Before such an ideal how contemptibly petty seem the unseemly bickerings of the whole vivisection controversy!

CONCERNING MEDICAL LANGUAGE.*

One of the most amusing inconsistencies of a small class of minds otherwise progressive, scientific and rational, is their unreasoning conservatism concerning the spelling and use of certain words. In any other subject, for instance therapeutics or surgery, they will welcome investigation, and further it, admitting the duty of improving upon the old, and of pushing on toward a more simple and perfect science. But when you suggest that language, the tool of thought, deserves consideration, is very clumsy and archaic, is capable of being improved,—at once they shrink and are shocked at your temerity.

This attitude of hatred of innovation in one single field of human activity, while admitting the law of progress in all other departments, is also coupled with a second inconsistency; a dogmatism of conviction that the change or modification of language urged is barbarous, almost sacrilegious, that you are a sort of ill-bred upstart and ignoramus in advocating it, and that the old form you desire to supplant is the correct one, while your new-fangled thing is absurd and is born of ignorance. The bigotry of the average Englishman in these matters is a charming exhibition of medieval-mindedness translated to an age of civilization and progress. He actually thinks that the spelling-reformer, however infinitesimal and microscopic the spelling-change advocated, is the product of "Americanism," and of American ignorance of how to

* Delivered at the Meeting of the American Medical Editors' Association, held at Atlanta, May, 1896.

spell. The American inheritor of the English dogmatism tries to hide his feeling, shrinks from such laughable exposure of his own ignorance, and even covers the sheep-skin of his ignorance with the lion-skin of erudition. I shall not soon forget a contributor whose English was equal in barbarity to that of our average senator, whose spelling by any standard was atrocious, and whose medical ideas were of course on a par with their means of expression; but he was certain of one thing, that he wanted hemorrhage "spelled rightly, with æ." This to him was the symbol of scholarship,—his nose was safely in the sand of erudition, but his whole body was delightfully visible.

I have had the pleasure of replying to but three or four critics of a few tiny philologic reforms or changes that seemed to me wise. Besides these four the world seems content either to accept or to reject in silence. I was struck by the fact that in all four of the speaking objectors their objections were solely based upon two foundations: their personal dislike of change, and their complete ignorance of philology. Concerning the argument, *de gustibus*, there is surely no discussion, because taste, proverbially, is simply a subjective affair. But dogmatic opinion upon a subject in dispute, the deeply-rooted dogmatism upon things without a single minute's study of them or of their history,—this in a supposably scientific man is,—well! let us call it, deplorable. It is amusing, even instructively amusing, but it is, once more, deplorable. Such a person, if a surgeon, would be shocked if you asked him to pronounce dogmatically upon an unstudied question of therapeutics or of mental disease, or if a diagnostician he would not express the least judgment as to cataract-extraction, etc., but without an instant's study of philology he settles a philologic dispute off-hand and forever. Five minutes of glancing through any one of the hundreds of

books on the subject would have closed his lips, but that does not give him pause. He is sustained by the fact that "the English language as now written is good enough for me," and there floats through his mind hazy ideas that etymology demands the present method, and that at best you are a very bothersome and conceited person.

To one who has pondered the subject, however little, it must be painfully apparent that every other product unconsciously developed in the evolution of the race, whether plows, guns, matches, or books, has been found capable of betterment, and all civilization consists in improvement of or improvement upon the crude devices of early awkwardness. Why should language then be an exception to the rule? Those who have examined carefully aver that our language is a sorry instrument of thought, and bears about the same likeness to an ideal language that a hand-sickle does to the best reaping and binding machine of our day. It is plain, therefore, that the obstinate prejudice against any change whatsoever in it is most ill-advised and unreasonable.

We do not advise radical changes. The proper attitude of mind is one that welcomes slow and slight changes toward shortening and thus lessening the severe burden of education, and the expense of printing. Reform has a double motive here, psychologic and commercial. It has been estimated that our outrageous spelling costs one year of school-life of every child. The financial saving by lessening every printed page one line would probably pay the expenses of our government, and perhaps also retire on a life-pension the Senate besides. This line could be saved, and at least a day or two of the wasted school-life spared by abolishing *æ* and *œ*, by lopping off a few redundant tails of words, and by observing a half-dozen little rules,—all of which are not only advisable but philologically necessary, not only not improper but genuinely proper.

As to *æ*, and *æ*, these diphthongs are difficult to write, and they are against the genius of the language. They have already been sloughed in a large number of words, and those who oppose what they are pleased to call "the mutilation of our beloved language," must answer our demand for a rule. Shall we reinsert the *æ*, and *æ*, in words at present spelled with *e*, and which were derived from older words spelled with the darling diphthongs? And if you spell *hæmorrhage*, will you, as you should, pronounce it *he'-mor-aj*? It seems to me the etymologic sticklers are false to the old love, however true they may be to the new. Most of our words, for example, beginning with *pre*—are derived from the Latin *præ*. There are possibly a thousand of these words, such as *prescription*, *prepuce*, *pretend*, *preference*, etc. Shall we spell them all *præscription*, *præpuce*, etc? Shall we also be (etymologically) correct and write *hæresy*, *hæretic*, *anapæst*, *pæony*, *phænomenon*, *mæander*, *hæmatite*, *æther*, *dæmon*, *æsthetic*, *apharæsis*, *diæresis*, *archæology*, *palæography*, *gangræne*, *pædobaptist*, *cænobite*, *cæmety*, *cælestial*, *æconomy*, *epicæne*, *æsophagus*, *phænix*, *solæcism*, and hundreds of derivatives and similar words as they are here written? Will you spell *diocese*, *diæcese*? Will you spell *fancy*, *frantic*, and *frenzy* with a very etymologically proper *ph*, instead of an incorrect *f*? If so, your phancy will make your readers phrenzied, and you phrantic, I fear. Will you write *tansy*, *treacle* and *treasure* with a *th*? If so, lay up your treasure in heaven, and drink much threacle and thansy while your days do last.

Etymologic spelling is a long-exploded absurdity. It has led many a poor word-grubber into the quagmires of absurdity. It was, says the great English etymologist, a sort of mania in the sixteenth century, and has thrown confusion and ridicule into the study of language. "Its ignorant meddlesomeness introduced many false forms," so that hardly any word now tells its genesis or history by its

written form. Every word must be examined separately, its changes both of form and sound must be studied historically, before we can know much about it. The final dictum of Skeat is as follows :—

“The shortest description of modern spelling is to say that, speaking generally, it represents a Victorian pronunciation of ‘popular’ words by means of symbols imperfectly adapted to an Elizabethan pronunciation, the symbols themselves being mainly due to the Anglo-French scribes of the Plantagenet period, whose system was meant to be phonetic. It also aims at suggesting to the eye the original forms of ‘learned’ words. It is thus governed by two conflicting principles, neither of which, even in its own domain, is consistently carried out.”

It may be said that as many of our medical terms are not derived from the Greek or Latin by a real and historical process, but are *de novo* creations, using the ancient roots and stems as convenient materials of coinage, the objection does not hold, and that our words do therefore show their originals by their form. Alas! not even this poor excuse bears scrutiny. The centuries have infected the modern word-minter, and the inevitable hurry and destiny of evolution will not let the need of condensation rest. Even while we look at our printed dictionary the *Zeitgeist* is telescoping our words. Who now says *thyreoid* and *choreoid*? These forms are perfectly proper, and your dictionary-man with the awful sword of “etymology” and conservatism held across his path, may be forced to write them so, but he smiles sadly as he does it and shakes his head despondently. Every one of the hundreds of words ending in *-oid* is derived (supposably) from the Greek *ειδος*. Why, then, is it *-oid* and not *-eid*? *Bulb* and *Bulbar* should be *bolb* and *bolbar*, as they come from *βολβός*. *Croup* is from A. S. *kropan*. How can an etymology-lover write *hyoid*? What resemblance is there to the Greek word? Our convenient com-

pound word should etymologically be spelled *thyreo-hyoeid*, instead of *thyro-hyoid*. Why is one who forbids one literal iota of change in present words so utterly indifferent about the changes that have already crept in in the past? There are thousands of words in which Greek *i* has been changed to English *e*, as, *e.g.*, all the words ending in *rhæa*. He is wrathful because one wants to change them to *rhea*; why not so to those who changed the original *i* to *e*? He is as idolatrous of his beloved thousand *hæms*, but the Greek was *hai* and not *hæ*. One of the most ludicrous instances of this imaginable is the very new coinage which its author spells *cæliotomy*. The anger of enraged Jupiter was as nothing to that aroused by the suggestion to shorten this to *celiotomy*. But in that word as given out, there is, "once you trip on it," perhaps not "twenty-nine," but at least two or three "distinct damnations, one sure if another fails." Why in the name of holy etymology, if derived from Greek *κοιλία* do we have *c* instead of *k*, and why *cæ* instead of *coi*? If the *cælia* is derived from the Latin, then why the hybrid? Surely one who pretends passionate devotion to pretty Ettie Mollie G., must not at the same time be paying court to her hated rival, the little illegit Miss Hybrid.*

Every page of the dictionaries proves the absurdity of trying to make spelling teach etymology; and it is a fact that not anybody, certainly not spelling-reformers, more certainly not the conservatives, cares two beans for the etymology. If we did not have the printed word to stamp the coin it would be a different matter, but with dictionaries everywhere to give the origins and histories of all words, what imaginable service or usefulness is there in the attempt to load each down with its biography? In

* Another sorry neoplasm is *uranalysis*,—"analysis of ur"—to replace an equally absurd word, *urinalysis*,—"alysis of urin." We have looked in vain for the words *alysis*, and *ur*.

reading or speaking no one can think or wishes to think of the roots thousands of years old. As well demand that your bouquet of roses shall have their roots and soil. The investigating botanist may do so, and may know all about the root and branch and stem, but workaday folk are not botanists or radical philologists. If one in reading had to know or keep in mind a half-conscious recognition of the etymology of each word, he would be able to read about one book a year, civilization and science would stagnate, and we might, could, would, or should all become congressmen, millionaires, or jingoes.

The only proper and sensible purpose of spelling is its phonetic purpose. All the philologic tories of all christianism or heathendom combined cannot prevent the inevitable modifications—even entire changes of the spoken sound. In that witches' cauldron of modern English, especially the medical variety, we have from every source cooked a most remarkable hodgepodge of illogic and inconsequential conglomeration. Our ancestors have commanded us to eat of it, but do not let us choke it down, hiding our tears of disgust, and vowing it is incomparably toothsome. We assuredly should not with glee add more of the worst to the olla podrida, and when we have a justifiable opportunity to make it a millionth part better, we should not set up a cry of revolt, and cry, sacrilege! In an African forest the trail or pathway has constantly recurring detours, angles and curves, so that one walks about twice as far as necessary to reach landsend. No object prevents following a straight line. Why is this? It is because once a tree blew down here across the path, there a limb broke off, there a stone rolled down. So the savage went around these objects, forming a new and crooked path. When the termites devoured the tree the new trail was more worn than the old one, and with thoughtless imitation the men kept on laboriously winding and twist-

ing their way instead of going straight on and across. It is the barbarian's habit of mind to keep on the unreasoning way his predecessor traveled. It is the essence of civilization to make straight the way. The incongruities of medical nomenclature and the stock-still standing of irrational conservatism lead one to wonder if we are ever to awaken to the need of philologic civilization. No judicious reformer asks for revolution, but for evolution; we need be in no hurry; we should not make profound and radical changes, because (and only because) it is impossible to bring them about; but when men oppose every jot and tittle of change, when they fight against one single conscious change of precisely the same kind as has already been a thousand times unconsciously wrought,—then surely one must with open-eyed astonishment ask, Really, now, were you not born in Africa?

I wish again to emphasize the limitation that we do not advise one clean straight jump into phonetic spelling, simply because it is impossible. We seem like some mothers,—the uglier and sicklier our orthographic child the more we love and cherish it. The maternal love is wise, but the other is mania. Turn to Germany and what do we find? So far as phonetic writing is concerned their language was already marvelously perfect, but because it was not entirely perfect the Germans within a few past years have made it so. With us, whose spelling is the butt of the world's ridicule, with us we shriek our parrot-anger or growl our ursine bigotry if one suggest lopping off a supernumerary finger from our hideous teratologic thing. What kind of a nation is this Germany? Well, for one thing, she delights to pay her debts with value-received, while another nation we know of, from the hollows of lost manhood and politic poltroonery, squeaks and squizzles its senatorial sixteen to one. Another thing about this foolish Germany is that when a foolish nation attacks her, at once

her edict of blood and iron goes forth, and in a hurricane of heroic energy her legions sweep resistless over a conquered land into the capital city of the world, and crown her Emperor there in the coronation-halls of dead Bourbonism. How is it with another nation? To show our braggart boorishness we intermeddle in another nation's rebellion, or we espouse the cause of a half-barbaric folk thousands of miles away, for whom we do not care a fig, against the world's one great civilizing and colonizing nation, and with a corporal's guard of 25,000 soldiers cry, War, War, War! How is it with Germany as to science generally, and education, and especially as to medical science? The thousands of our young men sent to her laboratories is sufficient answer. Well, this nation, as I have said, in a few years, and at one sweep, has cut the Gordian knot of spelling, simplified and shortened education thereby, and while we are squirming and making wry mouths over a few paltry and insignificant changes, she has wholly reformed the language that Goethe and Lessing wrote.

One of my four kind critics once wrote me remonstrating, solely on the ground of euphony, against cutting the *-al* off the tail end of many adjectives; "he didn't like it," he said, "it didn't sound well." He seemed wholly forgetful that the overlong tail of a thousand such words had already been lopped off, or perhaps had never grown out. In some countries the sheep's tails are so long that they hitch a tiny wagon to each animal, so that it hauls its caudal extremity instead of dragging it on the ground. Now the difference between these sheep and our medical Bo Peep *al*-pacas, is that the words grow no valuable wool on their tails, and that we trawl them on the ground behind us as the ladies do their dress-trails. Sheep and words and ladies are alike in the one important respect that, in the poet's immortal lines, we let them alone and

they surely come home, dragging their tails (and much else also) behind them.

To my genial critic who wished his words and sheep (his ladies, too, I wonder?) to have tails and trails twice too long, I sent the following skit, to illustrate the already recognized fact of the redundancy of many word-tails, and to suggest that we either retail all the short-tailed curs, or that we curtail all the long-tailed puppies. Either one thing or the other; if you refuse to say *chemic* and *theoretic*, then you must not say *scientific* and *hydrochloric*. If you make us say *chemical* and *theoretical*, then, like a sucking dove we will roar you for consistency and ask that you be *scientific*, or else we will prescribe *nitrical* and *hydrochlorical* acid for your alarming *gastrical* torpor and obstinacy. My strabismic letter to my friend was as follows:—

Some Scientifical Difficulties.—The patient was at the Polyclinical Hospital—a very sick woman; she was ascitical and cyanotical; she had an anemical (dicrotical or anacrotical) murmur; splanchinical and splenical dulness was pronounced. Neither the allopathical nor the homeopathical consultants could determine whether the affection was of extrinsical or intrinsical origin, whether anabolical, katabolical, atrophical, septicemical, lithemical, luetical, hemical, hemolytical, thermal, tabetical, hepatic, or encephalical. The specialists were called in, and laryngoscopical, ophthalmoscopical, gynecological and otoscopical examinations were made. The laryngoscopical man said a diphtheritical membrane was forming, and the phrenical nerve was pressed upon. The next averred the difficulty was esophorical or exophorical, that a blennorrhagical inflammation, perhaps a rheumatical iritis existed. After an endoscopical examination the gynecological expert said pelvic (or pubical) disorder was present and a bad cystical and chorionical state of affairs. The ear-man claimed that the disease was specifical, that the otical ganglion was syphilitical and its condition

pathognomonical. The diagnostical and prognostical difficulties were certes becoming most prolific !

As to therapeutical measures, one advised cardiacal and tonical treatment, another hypodermical ; one thought hydriatical methods good, another antiphlogistical, while still another suggested hypnotical and soporifical agents. Galvanical and faradical electricity, as well as statical and franklinical, were advised. The surgeon after a diagnostical incision (under anæsthetical precautions) spoke of a plastical operation. Cautical applications to the throat were considered good, and the exhibition of prussical, or of borical, nitrical and hydrochlorical acids, perhaps also carbolical with malical and acetical acid drinks. The general physician thought antineuralgical and antirheumatical prescriptions sufficient, but the obstetrician would have added oxytocical ones.

The patient died of *al*-coholical paretical dementia, super-induced, it is thought, by despair at the orthographical and phonetical conservatism of progressive Americans.

To make short work of it, the essence of the matter concerning *-ic* and *-ical* is this :—Both of the suffixes, *-ic* and *-ical* are terminals, the significance of which is to give an adjectival meaning to a word. To add them both to one word is to contend that dogs and sheep should either have two tails, or that one tail should be twice as long as normal. If the suffix, *-ic*, gives the adjectival meaning, why add a second ? The French, from whom we get many of the *-ic* terminations find it unnecessary to add an *-al*. If a word is an adjective can you make it more so by tautologic caudalizations ? (There are a few words whose stems end in *-ic* such as *vesical*, *clinical*, *logical*, *finical*, etc., and these require the *-al* to make them adjectives, but these are provings of the rule, and the query why you don't say *vesic*, *logic*, and *clinic*, is the prompting of thoughtlessness. I would not object however, in the least, to clipping these also.) If a word needs two adjectival tails why should we not

say *bestialic*, *linealic*, etc.? If these were admitted of course the *-al* lovers would have to add their pet to the word, and we should have *bestialical*, *linealical*, etc.,—each sheep would then require two toy-wagons. This reminds one of the wonderful word, *pockethandkerchief*. The primary good word was *kerchief*, a head-covering. We now call a piece of lace or linen a pocket-hand-head-covering: I am not unmindful of the hyperfinical distinction that some hyperfinical folk have sought to establish as regards *-ic* and *-ical*, *-ac*, and *-acal*, that the *-ics* and *-acs* denote primary objective attributes of or pertaining to the things, whilst the *-icals* and the *-acals* denote secondary qualities—of the nature of or connected with the attribute in *-ic* or *-ac*, i. e., more remotely and subjectively relating to the thing. For example, a *cardiac valve*, the *cardiacal qualities* of a drug; a *historic answer*; a *historical treatise*; a *comic paper*; a *comical idea*. But this contention is impossible of realization,—1. Because hundreds of words by custom have become absolutely limited to either form singly and alone; 2. Because not even the best writers observe the distinction; 3. It is altogether too fine a distinction to be made by the ordinary workaday humanity; 4. It would not satisfy the *-alophites*, who want the *-al* on the end of some of their words, without question, forever, and ever, world without end, Amen! Think of saying *Arabical*, *Teutonical*, *Celtical*, etc.! We should of course have to adopt *bestialic* and *bestialical* (or bestic and bestical), *clinic* and *climical*, *syphilitic* and *syphilitical*, and so on to the end. It is quite plain this system-mongering and analogy-craze leads us into sorry plights. In fact, it should be apparent upon a minute's reflection that in a language so utterly composite, illogical and non-systemic as ours, the argument from or for analogy is absurdity itself. In one respect this is an advantage, because when we can succeed in battering down the dead wall of ancient prejudice, and explode the

arsenal of etymological spelling, then we may bring some order and sanity in the rebellious mob of English words.

Of one thing we may rest assured: All the tory immobility of all the world cannot prevent change. It is as useless to attempt it as to try to stop the rising tide, or to stay the resistless and silent forces of evolution itself. It is the part of wisdom to guide evolution, not to fight it to the death, to guide language-evolution in the interests of brevity and perspicacity, not to cling irrationally to the old ways which clear vision may clearly see are doomed. The language of Chaucer, and even of Shakespeare, as shown in the original forms, is an utterly different language from that we speak to-day. The ordinary American, if he could hear Chaucer speaking, or if he could listen to a phonographic repetition of his actual speech, could not understand a sentence, hardly a word of it. The printed form cannot bind the ever-fluctuating pronunciation. The province or function of the printed (or written) word is to stand as a symbol or visible analogue of the spoken word. Etymology to the dogs! Printing makes certain a record of the etymology, but to seek to clog the word itself with it is the worst of delusions. Our duty scientifically, sociologically, and philologically is to keep the printed form plastic. The crystallized language is a dead language, and when there is no plasticity of language there is none of the minds and civilization of those who speak that language. There is a subtle, but all-powerful reaction and retroaction of language upon mind. Men progressive in science and sociology must be progressive in language and the use of language. Prick a German word and it bleeds. There is the pulsing heart of meaning behind it, flooding it with sanguine significance. French words, and the Greek-derived or Latin-derived words of our own tongue are as bloodless, dead and meaningless as are to us Chinese pictographs. The comparison of the large, plastic, ener-

getic, capable German with the narrow, crystalline, stationary, incapable Frenchman must at once spring into view, and the prophecy is clear as to which one is to inherit the future. The French birth-rate is about equal to the death-rate; that of the Teuton is far in excess. Do you believe in progressive Teutonism, and Anglo-Saxonism, or in reactionism, toryism, and ultramontism? Choose your partners, gentlemen. Your choice in so little a matter as the use of words will tell the plain story of mental bias, quite as well as the choice of religion or of political party.

Specifically, the microscopic modifications I have urged here are as follows :—

1. Abolish in English words the archaic, unnecessary, bothersome *æ* and *œ*, supplanting it by *e*.

2. Cease adding the tautologic *-al* to adjectives having already one adjectival suffix, *-ic*. It is already done in thousands of words; finish the job.

3. Drop the useless hyphen in words whose parts are derived from classic languages. In ten thousand words you have already done so; finish with the rest. But retain the hyphen in such compound terms as express a single idea by two semifused English words, especially when both are nouns. E. g., say *antitoxin* (not *anti-toxin*), *culdesac*, (not *cul-de-sac*), *postmortem*, (not *post-mortem*) *ventrofixation*, (not *ventro-fixation*), etc. Keep the hyphen, because it is necessary to avoid confusion and doubtfulness of meaning, in *curet-spoon*, *heart-murmur*, *skin-disease*, *sleeping-sickness*, etc.

4. Drop the useless *-te* from *curet*, *brunet*, *fourchet*, *etiquet*, *cigaret*, etc. You have already lopped it off from *cutlet*, *doublet*, *quartet*, *quintet*, *sextet*, *septet*, *racket*, *minuet*, *fillet*, *corset*, *stylet*, *tourniquet*, *bouquet*, etc. Finish the job.

In the same way cut off the useless *-me* from many words, writing *program*, *gram*, *centigram*, etc., just as already we do *telegram*, *anagram*, *diagram*, *epigram*; let's make an end of it.

5. Use figures instead of spelling out numbers, at least those above ten.

6. Anglicise foreign terms when a goodly proportion of your readers will not understand them in the originals. Use italics as little as possible; use as few foreign words and terms as possible, because the vast majority of your audience cannot understand them (even if *you* do): and because there's a deal of silly conceit in airing exotics of speech.

7. As to the spelling of chemic terms, accept the recommendations of the American Association for the Advancement of Science, which after years of dispassionate investigation advised that we drop the final *e* in *bromid*, *iodid*, etc., and in *bromin*, *iodin*, *atropin*, *quinin*, etc. Say *phenol* instead of *carbolic acid*, *glycerol* instead of *glycerin*, etc.

8. Abolish all diereses and accents. They cannot teach pronunciation, and they are useless luggage. Let us write *oophorectomy*, *cooperation*, *ptomain*, *leucomain*, etc., without the diereses. When a foreign word is Anglicised let us do it completely, and not drag over into our domain the exotics of foreign habit, leaving it, *e. g.*, neither English nor French. Leave to the poets the acute, the grave, and the circumflex accents, that are foreign to the spirit of our own tongue.

9. Do not bother about hybrid terms. A mule is a better animal than either its father or its mother. It is only finicky sticklers that are horrified by hybrid words. There are many, many thousands of them in our language, good words too, that have been used for centuries, and that always will be used. There is no earthly objection to them,—and indeed we should rather welcome them if they are good words, expressive and short. More than any other language ours is adapted to receive them and use them, and there are more of them in it than in any other language. Instead of being ashamed of the fact we should

be proud of it, as it shows our receptivity and plasticity. If we are bound to have the defects of our virtues, let us not be ashamed of the virtues of our defects.

Finally, I would beg that you carefully consider the source and secret reasons that exist for opposition to the foregoing recommendations. Ignorance, colossal, imperturbable, impertinent ignorance is characteristic of much of it. Read, for example, the letters in the *British Medical Journal* from correspondents (not editorial utterances, because the editors know better, and have publicly advised dropping α and α), and you will see these objectors haven't studied philology five minutes in their lives, and are living in an antediluvian world.

But, again consider the source, I beg of you, and you will very often find that it is the secret influence of the commercial medical publisher that is at work. He publishes a dictionary committed to the old ways, and hence prints his medical journals and books in the archaic language of his dictionary. It means expense and loss of money to him in very many ways to have his "authorities" supplanted. The astute editor of the *Journal of the American Medical Association* has caught this aspect of the matter, and an editorial in one of the issues of January, 1896, happily sets it forth. It becomes an important concern of the profession whether it has any scientific and literary rights, and if it shall govern itself or be governed by its publishing servants, very accommodating editors, and self-interest generally. What an instructive fact it is to see a journal that has once been taught how to spell go back under the domination of commercialism to the "flesh-pots of Egypt." In this connection it is worthy of note that the two considerable journals of the United States *not* controlled by the commercial publisher, the *Boston Medical and Surgical Journal* (representing the best literary and scientific culture of the eastern states) and the *Journal of the Association*,

(representing also the enterprise and freedom of the western and of all states) have long ago adopted and do now use the more progressive methods of spelling. The same practice on the part of many other reputable journals, and the unanimous acceptance of it by the American Medical Editor's Association three years ago,*—these and more,

* From *The Medical News*, June 17, 1893, I reproduce from the paper read at the meeting of the American Medical Editors' Association in Milwaukee, June 5, 1893, the following sentences:—

1. Of all the languages of the civilized world there is none that in the most distant manner can rival the English in the ludicrous illogicality and wretched lawlessness of its orthography. In other languages there is a manifest philologic sanity that evidently seeks to hold the written (or printed) word in some sort of relationship with the spoken word. But in our language the reverse seems to be the case; the more methods in which a single sound can be spelled the better it seemed to please the fathers of the language. As Professor Lounsbury says: "There is nothing more contemptible than our present spelling, unless it be the reasons usually given for clinging to it."

2. The labor which this fact imposes upon the child's mind, and upon all minds that, so far as language-learning goes, persist in the prepubertic stage, is a labor that conceived in its entirety is literally appalling. The German child learns in one year, and well, what the English child learns in three, and poorly.† It is so tremendous a labor that even few educated men reach unconsciousness and ease of orthography, and for the great mass of people it is a constant source of worry or chagrin. To a vast number of people the secret consciousness of their orthographic failing keeps them from the pleasure of writing and composition, or prevents them from profitable employment. To every person that writes, the excess of labor required by our barbaric spelling is a huge waste of time and a heightener of the friction of life. With the correlated barbarism of pronunciation, it is the greatest obstacle to the spread of English as the world's great, sole tongue.

3. The foregoing facts are so incontrovertible that no one who has even cursorily looked into philology and pedagogics has any tendency to deny them. Equally certain is it that all of our great students and masters of philology are entirely agreed as to the tremendous importance of lessening the burdensome labor of education, and the friction of life, by some approach,

† Professor March says that "it has been computed that we throw away \$15,000,000 a year paying teachers for adding the brains of our children with bad spelling, and at least \$100,000,000 more paying printers and publishers for sprinkling our books and papers with silent letters."

are most encouraging proofs of our freedom from prejudice and dogmatism, and that we are alive to the demands of literary as well as scientific progress. The suggestion need hardly be added that as without payment we give our articles, the product of our laborious lives and of our devotion, to nonmedical men, out of which they make fortunes,

great or little, toward the phonetic spelling of English words. As succinctly stated in his preface by the learned editor of the great *Century Dictionary*: "The language is struggling toward a more consistent and phonetic spelling, and it is proper in disputed and doubtful cases to cast the influence of the dictionary in favor of this movement, both by its own usage in the body of the text, and at the head of articles by the order of forms, or the selection of the form under which the word shall be treated."

Never has more capital been invested in similar enterprises, and never has more philologic erudition been gathered to the service than in the editing and publishing of those splendid lexicographic monuments of American scholarship, the *New Webster*, the *Century*, and the *Standard* dictionaries. It is equally true that in each case the most earnest desire of the men in charge of these works has been to go to the furthest admissible limit dared in recommending the shortening and rationalizing of the spelling of English words. They have only stopped when and where they thought further advance would result in a baulking, and a refusal of the people to follow.

Words fail me to express my amazement to hear men object to all change in the customary spelling. To be sure, they are but few, and those who have never given the matter an hour's thought or study, who thus blindly cling to the fetich of custom, stolidly resisting any change whatsoever. The changes that have been made, and that have become the rule—these they willingly accept. They have grown used to spelling *music* and *public* without a final *k*, and are willing to leave off this useless second tail. (The English even now stick to the final *k* in *almanac*.) But their mental forefathers as stoutly resisted the curtailing process, and their similarly-minded children will finally accept the changes that progressive minds are now forcing on their fathers. The stupidest, most disgusting thing in the world, is the brute conservatism that refuses all change, good or not good, from stolid, unreasoning desire for things as they are. Better chorea, ay, better epilepsy than absolute paralysis. Conservatism is the sham coyness of linguistic old-maidism, the crinolin fig-leaf of philologic prudery, a fig-leaf, too, not the result of too much, but of too little knowledge—indeed, of an abysmal ignorance of the history of the language.

And most strange of all is such a dead-blank wall of prejudice on the part of medical men. Their science is a progressive one; their life is harassed

it hardly becomes them to dictate to us as to literary and scientific matters. If you contribute to these journals you have a perfect right to demand that your ideas of language shall be followed in their printing. Accompany your article or book with the condition that your choice of spelling-methods, etc., be carried out.

and hurried with the crush of duties and opportunities. Every hour's experience teaches them to ignore precedent and to cut by the shortest route to the desired end. No body of men is more hampered, and in no calling is labor so much thwarted as in theirs, by popular inherited prejudices, and the old unsloughed snake-skins of quackery, of myth, and of mummery.

The vast majority of medical words have not grown out of the old languages, either of the ancient living Greek or of the mediævally preserved dead Greek. When a word is desired the modern minter snaps out his Liddell and Scott, gets some words that best suit his purpose, and shakes them together in his etymologic basket until they cohere into some sort of unity, not infrequently a very ludicrous one.

The argument most relied on by the obstructionists is the etymologic one. But even this poor scarecrow cannot be set up in our medical cornfields. I do not think the etymologic argument of much force, even in the general literary language, because already the form in a large portion of our words is altogether misleading, changed, or lost, and because the vast majority of people will and can never know anything of the etymologic rootings of their language. But, far more important still is the fact that with printing came the impossibility of a coinage ever being lost, its history unrecorded, or its tiniest rootlet unreserved.

But far and away over all is the fact that the needs and the help of the living millions of bodies and minds present and to come outweigh linguistic and philologic considerations. Language was made for man, not man for language.

Moreover, and this note well, despite all the literary coxcombs and philologic old maids of Christendom, reform is inevitable. The people, with unerring instinct, are determined to mold their language into some better conformity to their needs. Slang is riotously rampant, and slang is language in the making. Some reform in spelling is as certain to come as future men and women are certain to come, and wisdom on our part is to accept the inevitable, and to make that inevitable as sensible as we can. As another has said: "The grammarian, the purist, the pernicketty stickler for trifles is the deadly foe of good English, rich in idioms and racy of the soil."

THE ROLE OF MATERNAL LOVE IN ORGANIC EVOLUTION.*

In his address before the British Association Lord Salisbury recapitulated the three great mysteries to the solution of which science has in vain directed her attention. The origins of atoms, of ether, and of life, are to-day the most utter mysteries. To account for them no human mind has framed even the faintest concept worthy of consideration. We have only the merest hints of the possibility of explanation of gravitation; concerning electricity we are getting only a little better idea; but as to physiologic chemistry our little knowledge serves only to make our great ignorance more frightful. All origins of things are shrouded in impenetrable mystery, and our philosophies are but weak and sorry attempts to widen the light a wee little bit about us. No philosophy and no religion explains finalities, and all efforts end only in resolving many lesser mysteries into fewer great mysteries. The conception of Biologos, incoming light and love, entering inorganic worlds and matter as a great incarnation-principle and spiritualizing force, electrifies and quickens the mental, imaginative, and moral man as none other; but, of course, it too ends only in a little broadening of the light-way about our darkness-encircled lives.

But it seems to me that so far as concerns the individual manifestations of life, we may and we must differentiate clearly between the love of one's own life and the love of

* Read before the Wistar Biological Association, Philadelphia, Dec. 14, 1894; The Philadelphia Association of Kindergartners, April 7, 1896, etc.

the life of one's descendants. The cuckoo bird has not enough strength of the maternal instinct to build a nest and incubate her own eggs. In pigeons the male has a far stronger maternal instinct than the female, and in some other birds the male has resolutely to fight for and defend the eggs from the destructive habits of the female. Some animals will expose themselves to danger, even die most heroically in defending their young, whilst the kangaroo mother, it is said, will, when hotly pursued, drop one or more of her little ones to lighten her load. In human life, also, as we well know, some people care little for children, even for those of their own flesh and blood, whilst others will sacrifice their own lives with most pathetic heroism for the education and up-bringing of their young.

It therefore appears to me plain that we should distinguish sharply between self-love and child-love. Fundamentally, I doubt not, they proceed from one ultimate unity, but in biologic manifestation they may be considered as two distinct exhibitions or phases of the life-force. One is devoted to the saving of the individual life, the other to the perpetuation of life in new individuals. It is perhaps easy to recognize the one as a blind, purposeless force, but the incoming of maternal love is not thus to be accounted for.

I have been forced to use the term maternal love in default of a better one to express an unnamed fact or generalization of facts much larger than that of simple maternity. In many animals we find the father taking upon himself many of the duties usually fulfilled by the mother, and at all times the purposes and results of the genesial instinct are carried out by an intrinsically-interwoven and correspondent series of duties of both parents. Moreover, if we descend to the vegetable world the eye that is trained to observe facts rather than the accepted wordings and ideas of facts, sees everywhere that the phenomena of reproduction, whether in anemophilous, ento-

mophilous, or cryptogamic orders, are really asexual, and the plants or trees themselves have no fundamental morphologic differences of structure due to sexualism. Indeed, the so-called "male" and "female" organs are often produced by the same plant, and even by the same twig and the same flower.

I have racked my brain to find or invent a term that should indicate the large biologic instinct that prepares the organs for reproduction, that begets, and that cares for the new being after it is begotten, whether it be in the plant, the animal, or the human world. We have observation of a profound and unitary force that directly or indirectly dominates all organic life during almost every hour of adult existence. In the plant-world every function pertains to or ends in seed-production, and just as a father horn-bill bird reduces himself to a skeleton and utter exhaustion in getting and carrying food to his mate and nestlings, just as a human parent wears life out in heroic sacrifice for beloved children, just exactly so will a tree under like disadvantageous conditions of nutriment commit suicide in the production of seeds. An Indian mother, in order to rescue her baby a few feet away, crawls from behind the rock protecting her from the guns of United States soldiers. She knows the act may bring a bullet in her brain, but she saves the baby and dies. A hen in a burning barn gathers her chickens beneath her and is burned to a statuesque cinder, but the singed chicks are saved by the dead mother-body. Is it not the same divine love that filled both hearts? Is there anything else in the world like that that unites and holds in one all living things? I pity one who does not see in such things the living God instantly present and profoundly interested in carrying on his biologic world.

There is one silent, subtle, palpitant pang and power of love that thrills through all organic life, that murmurs

in all living things, and swells and sings its unheard song in the inmost hearts of grass, rose, or tree ; of cow, tiger, or bird ; of man, maid, or mother,—all straining eye and hope toward the renewed young world to come. It is this great supernatural force for which I would find a name applicable to all kinds of life and all phases of its function. In its purest and sweetest quality it is mother-love, and so in order to give it a naming we may call it that. But I would wish that the connotation may not be forgotten that it is also father-love as well, and that it is one and identical with that beautiful power that makes the pigeon turn the eggs upon which she sits, that makes the grass bloom, and the bee to seek the bloom.

Possibly some of the more "scientific" of you were a little startled when I used the word "supernatural." It has been quite the fashion among a certain class of good folk to think that anything named scientific must not have aught to do with such foolish old used-up words. Indeed, it is supposed that science is wholly given to explaining things by the agency of physical strains and stresses, by reactions and reflexes, mechanic laws and natural selections, struggles for existence, and all that. It positively makes some people purple with rage if one dares to suggest that there may be such a thing as "vital force," or "soul," and a hint as to the possible existence of divinity, either in man or above him, elicits a pitying contempt of you that freezes the very circumambient air. Well, well! These are very wise people indeed, but the birds will sing and build nests after these brethren are gone to their agnostic heaven. Even they have their uses in a world of incongruous and changeful conditions!

Science, I take it, is, chiefest of all things, the unprejudiced, open-eyed observation and systematization of facts ; the construction to be put upon them, the meaning of facts, is another matter, and differs somewhat according to the

person who philosophizes. Facts are very patient, uncomplaining things; very pliant and compliant, at least for a time; they bear a deal of strange philosophizing over and about them, very meekly. Some people have been known to ignore them entirely, and yet the patient facts did not worry or stop existing. And those who thus falsely construe, or who thus ignore, are quite happy also. All things have their compensations, and it would be a great pity if dogmatism and atheism were denied the compensation at least of self-satisfaction.

The criticism of much that passes under the name of science, and the fault of many so-called scientists, is the lack of sympathy. It is only a keen sense of love, interest, and fellow-feeling, that gives that alert use of the imagination that leads to a knowledge of the truth. The collator of facts with the light only of cold reason and intellect will never find lots of facts in the world.

It begins slowly to break, even upon the most dry-as-dust scientist, that there are some things not dreamed of in the evolution-philosophy, and the suggestion may not bring danger to the suggester that the fight to death for the supremacy of the deer herd is not an unqualified necessity from the axioms of the "struggle for existence," nor from the "law of the reaction of the organism to the environment." If the "environment" of maidenly beauty in Juliet begets "the reaction" in Romeo's fancy of springtime love, whence, it may be asked, whence Julia and her beauty? Or, to put the question in another form: Does not the stupidest intelligence catch hint from the universality, the self-sacrifice, and the power of the maternal instinct in every living organism, weed, insect, or human, that there is purpose and significance poured down into these beings from above, not growing out of them from any need or logic of present circumstance, or from any demands of their organisms, considered as

single and self-sufficient mechanisms? Does the "environment," or any so-called "law," or any so-called explanation of science, show why these billions of ever renascent beings should spend every energy of their lives in producing and caring for new beings to take their places? Why should we, animals and men, care a fig whether our places are taken or not? The sexual and maternal instinct holds masterly reign and control of the soul of every biologic thing, and gives the instant and incontrovertible lie to the libellous chatter that all is selfishness, all is mechanic, adamant law and purposeless change in our life below. Without the supernatant ocean of divine life and love behind it, the miraculous tide of maternal love could not infill and inthrill the tendrils and hearts of all living things, any more than, on a thousand miles of shore without the throbbing gush of ocean-tide, would a million little bays and inlets be filled and bathed with flashing wave and liquid life. When not thus full-flooded with the tide of love, the little empty estuaries of our individual lives are occupied in panting for its future coming, in mourning that it does not come, or in pensive memories of its past blessedness.

But possibly the hard-eyed is disgustedly muttering that this is all poetry and nonsense. Give us, he is probably saying, give us something scientific, something about "nature red with tooth and claw;" about bones; about protoplasm; dying planets; the pump-like action of the heart; and reflexes, and natural selection, and the survival of the fittest. And to the hard-eyed I might make answer that the truth of poetry is truer than the truth of science; that teeth and claws are very beautiful structures and serve glorious purposes; that bones were made by Biologos, and when dead are excellent objects of study for the hard-eyed ones; that none of us know anything about protoplasm except that it is living and mysterious; that neither of us

know anything about dead planets ; that natural selection is half-lie, half-truth, and that the survival of the "unfit" is a wonderful fact.

In all seriousness, and with the most sober scientific resolution, I contend that among the philosophies and sciences of the universe, whether idealistic or materialistic, the role of maternal love is either unrecognized entirely, or held in too light estimation. The term, "struggle for existence," for example, has been much talked about, and has been supposed to be the fundamental explanation of the phenomena of organic life, and, with natural selection, to furnish the solution of the riddles of organic evolution. But in most prosaic literalness, can any one not see that the distinguishing and determining characteristics, both in morphology and physiology have been more dominated by the instant and ceaseless influence of the instincts pertaining to reproduction? Can any one doubt that the progress of evolution, that the possibility and actuality of civilization have been instigated by the upworking and the outworking of the sexual passion, and the desire to find houses and food and place for the little ones? It is maternal love alone that has produced all the ideals and actualities of Beauty and Esthetics that we have; and so art, novel, drama, society, and ambition are the creations of this mysterious power.

In the plant-world every phase of form or function exists as a product of the strain toward inflorescence and seed-production. The trunks of the forest monarchs are the props of the flower to raise it high in air where the sun may reach and ripen, and where the winds may catch the pollen and carry it to waiting mates. Every form of leaf, every shape of growth, every coloration and build of flower pertain to the one end and aim of existence. Think of the inexhaustible ingenuity, the millionfold device for scattering seeds. Every sort of balloon conceivable has

been made by the cunning mother-trees for wafting their babes to far-away nourishing resting-places. My friend, Lafcadio Hearn, tells me of the ceiba tree in the West Indies, which bursting its pod like a gun, floats its white-winged seeds like a snow-storm over a city, and when they settle, quickly must the natives clear every one off the roofs, for if a single one lodges it will wreck and crush the house with its prolific roots. The natives think the tree has personality, like animals or men, and if you wish one of the trees cut down you must make your wood-cutter drunk in order to get him to do it.

Some of these tree-mothers surround their little ones with such impervious shells that they float and drift with tides and currents for weeks and months, and yet retain their life and growth-power till washed ashore. There are hairs, spines, and hard shells to protect; acid juices and poisons to sting and harrow; husks and hooks and spears to cut and hurt; and a thousandfold devices for getting the better of the curious or the hungry. Some make hooks and claws that catch any passing animal, and who, most tormented, as all boys and dogs well know, must carry them far and wide. But the birds, too, are great helpers. Darwin found that a clump of dried mud weighing nine grains, from the leg of a partridge, and which had been kept for three years, contained seeds from which he raised eighty-two distinct plants. Especially in eating the seeds for the sake of the fruit, the seeds preserving their vitality, the birds, as also animals, are great helpers in the distribution of the flora of the world. If you think that in nest-building a swallow probably travels about 400 miles a day, and in migration (also for love's sake) birds travel straight away from 500 to 1000 miles a day, we see how great must have been the influence of birds in plant-distribution. A curious and purely accidental function of the birds is the chance stocking of lakes and rivers above high

falls with fish, which, caught below, escape from claws or bill as the birds seek their nests, and dropping into these high, remote waters, people them with their kind; the life within and about the water in such localities is often thus entirely readjusted.

But I wish to call attention to a fact, our familiarity with which leads, as usual, to a forgetfulness of its far-reaching importance and significance. There are few people, even those who know better, who do not mistake a seed's stored-up supply for the seed itself. The seed may or may not be nutritious, but even if it is so, the true seed constitutes the infinitesimal part of what we roughly call the seed. The great bulk of every grain or seed is composed of a stored-up stock of concentrated nutriment clustered about the true seed, and upon which it feeds whilst springing its rootlets downward and its leaflets upward. Thus the bread, the potato, the apple we eat, is the food that has been cunningly prepared by the mother-plant for its offspring to use whilst it is getting its own organs of food-supply ready for their work. The yolk-sac of the fish or the egg of the bird is exactly the same sort of a contrivance.

But a remarkable deduction is to be made from all this, a deduction that is perfectly evident when we think of it and realize it, but it is a deduction that many of us seldom or never make. It is this: It is of course, self-evident, that the entire animal world, including the human, is wholly dependent upon the vegetable for food, and for the means of continuing its existence. Without the nutrient material furnished by the vegetable kingdom, the animal kingdom would at once die of starvation. But now consider well the implication of the fact, that it is entirely by means of nutriment stored up by plants to nourish *their* young, that, as it were, stolen by the animal world enables it to live. In other words, it is that great cosmic, regenerative force,

biologic maternal love, that has been ingenious enough to manufacture concentrated food with the necessary "keeping" qualities, and capable of supporting the life of plants and of animals. Their food is our food; what nourishes the vegetable children nourishes the animal children. (Thus we understand, in passing, why chloroform and other drugs affect plants exactly as they affect us.) Driven by the spur of solicitousness and love for its young, the plant has found out the great secret of food-formation. In this connection is it necessary to add a word as to the food of man derived from the animal? The flesh of animals is derived directly from grass and fruits and seeds, and this muscular tissue is thus itself the very product of the subtle, silent weaver of life we have called maternal love. The most perfect foods of man, milk and eggs, products of double distillation in the cellular alembic of maternal life, this wonderful strained white blood and living flesh,—what can we say of these works of the divine physiologic chemist? If we have grateful hearts and seeing minds, we can only thank and recognize the hand that fashioned and that reaches them to us, as the hand of God, who keeps up the repeopling of the world, and hence, who sees well to it that his little ones should be fed.

Although perhaps logically, and you will say also rhetorically out of place, I cannot forbear at this point to interject a word as to our care and treatment of hens and cows. Please do not smile at the sudden transition. When seen with the eyes of science, or with those of pure sympathy, there is nothing about living things that is not beautiful and winning and dignified. This great question of the willing obedience, loyalty, and service of the animal world to the human world, constantly arouses in sensitive hearts a multitude of painful thoughts. From every prolific grain or fruit, from dog and horse, especially from every maternal organism there run back to the divine center reins of guid-

ance and control which ensure loyalty, obedience, and service to a common "dim, far-off, unseen event." Else why the continued giving of milk when the calf has gone, why the continuous egg-production by the nonincubating mother? Animals are not so stupid as that! Dairy-folk well know the difficulty of getting cows to "give down" when they are maltreated, when the food is not good, or when deprived of their calves. Livingstone speaks of the African cows as especially "bad" in this respect, and that only "milk-fever" will compel them to give their milk. The milkers in the Scottish highlands used to have peculiar songs which made their cows generous. The hen and the cow are the most loyal of man's helpers and purveyors, and yet it is grievously shocking how ungrateful we are to them. We are only beginning to learn that our self-interest commands us to care for cows better, but even now their suffering from cold, the carelessness of farmers as to their food and water, the filth in which they live, is a disgrace both to our selfishness and to our humanity. If human mothers would only think of what these other mothers endure and how they are abused, there would be some hope that the milk given human babes would soon be purer, freer from disease, and yielded by a healthier and happier animal. It is known that violent emotion poisons human milk, why also may not the beatings and abuse of the cow change her milk harmfully? Babies, human and canine, have died in convulsions just after nursing when the mother had just been furious with anger or emotion. It may be confidently stated that, fed, housed and treated, as cows should be, and the milk cared for as it should be, there would be little enough profit to the dairyman if milk were furnished by him at twenty cents a quart. But it will probably require the scourges of tuberculosis and various diseases to teach us the little lesson that the commonest human sympathy

should long ago have taught. The same thought runs out as regards our egg-supply.

Let me extend my parenthesis by a word or two of advice as to teaching children sympathy for and fellow-feeling with animals. Enlist every child's interest in domestic pets and make young naturalists of them as soon as possible. But guard against making them mere collectors of dead animals. It is living not dead biology that quickens the sensibilities and deepens the child's conception of the world. Let him learn physiology rather than anatomy, psychology rather than neurology. What is needed is the lightning-like glance of intellectualized sympathy (at least the sympathy) flashed among the play and functions and relations of all palpitant life. Trained scientists are better museum-makers than children. Don't let the child kill and delude himself that that is science or biology. So soon as a child understands anything it can understand the pretty story of Mohammed cutting off the flaps of his coat in order not to disturb his kitten sleeping upon it. The animal child and the human child have a vast deal in common. There is nothing humanity needs more than to learn the duty of kindness and sympathy for all animal life. Have a multiplicity of domestic pets. Let children almost live in the Zoological Gardens. Beware of a person who doesn't like animals; something is deeply wrong with such a person. There are a dozen or two books all children should read as early as they can understand them. Such are Oswald's *Summerland and Zoological Sketches*; Mrs. Martin's *Life on an Ostrich Farm*; Nicols' *Zoological Notes*; Taylor's *The Sagacity and Morality of Plants*; Olive Thorne Miller's books, and those of Burroughs, perhaps; Hudson's splendid *The Naturalist in La Plata*; Wilson's *Studies in Life and Sense*; and, above all, the great work of Kipling, *Beast and Man in India*; and the great work of the greater son, Rudyard, *The Jungle Book*, superb and beyond praise.

Let Lubbock and Romanes wait for older heads. It is a strange family that do not think their cat and dog the most remarkable and lovable cat and dog in the world. Every pet will show animal spirit struggling toward the human, dumbly begging for human sympathy and help ; and, too, there frequently occur phenomena that make us shiver as if we should look into the sky and see great divine eyes beckoning ; facts that point to the unity of all life, infallible signs of the dependence of the body upon spirit,—soul and sentiment penetrating sense and flesh like hidden electricity. The anesthetics we use in surgery paralyze plant-metabolism and action, as, *e. g.*, in the sensitive plant ; and snake poison retards the germination of seeds. A friend of mine was kept awake nearly all night by some strange noise at the window. A dead cuckoo told the story of an endeavor to reach the supposed mate of the “cuckoo clock.” I went once a long distance to see a motherless hen which had driven the old cat away and was brooding over a lot of kittens, very watchful, very happy, and very proud. Mrs. Martin tells a similar story of the great Chakar playing the role of a most excellent foster-mother to a half hundred tiny puff-balls of incubator chicks, guarding, watching, careful not to put his great feet on them, etc. A childless dog tried to steal some little puppies, but failing, took a toy dog made of rubber and tried to nurse it, licked and coddled it tenderly for a long time. An English physician describes the mother-zeal of a Maltese cat, a strict monogamist, faithful even in widowhood. But if any of the other cats had kittens she would manage to get some of them, and in a few hours she had an abundant supply of milk for them. The dependence of this milk-secretion upon pure mother-love began in this wise : At seven years of age she witnessed an accident to a little kitten just weaned, to which she had previously had a great aversion. This kitten fell, and hurting itself, cried

piteously. At once dislike disappeared; "Zettie" ran to it, caressed it, and carried it upstairs. At this time she had been a widow for fourteen months, but she now began nursing the little orphan and continued to do so for two months. I have elsewhere related an exactly similar fact, except that it was a little dog, long childless, or puppyless if you please, that nursed a lost kitten. Numerous instances are on record of men having an ample milk-secretion and nursing babes. Wagtails use the backs of friendly stronger birds upon which they ride in long migrations. Elephants and men are the only animals that shed tears in weeping. Cows have been known to be so severely homesick that to save their lives they had to be returned to the old home. Dogs have returned home over 800 miles of unknown country; even when chloroformed it makes no difference in their return. A crow with clipped wings left his thieving new master and walked four miles through the snow to the old master. Dogs, monkeys, birds, and ducks have been known to die of a "broken heart," from loss of young, loss of their masters, etc. Ruskin tells the story of a race-horse that took sick and only got well when his pet kitten was telegraphed for and put in his stall. He then won the race! A mother monkey, the elder Kipling says, will carry with her for weeks the dried and dead body of her little one, fondling and petting it as if alive. It is said that if the male bird of Paradise is killed the female will continue to sit upon her eggs until she starves to death.

I have said that sympathy with the whole world of living things is the prime requisite of learning truth. This is true whether the truth be scientific, philosophic, or religious. It is especially so with children. The recognition of the maternal instinct in all other living things tells the young the nature of the world in which we live more than all the books and laboratories in the world. Take up the question of the growth and relative degrees of intelligence in

animals. Guided by sympathy and a careful observation of facts we can show the child clearly on what biologic intelligence depends. Careful scrutiny shows that all vegetables and animals have an infinite wealth of what may be called unconscious intelligence struggling for outlet. Every living thing, in its form, color, and function, is a palimpsest, behind the later bolder writing of which we see dimly the deeper, richer characters and messages of a more ancient truth. The intelligent energy that constitutes the essential being of all things is the same in all, but is prevented from coming to individual expression by the peculiarities of organization and the necessities of life. The greater, the infinitely greater part of the intelligence of our being, exists unconsciously, as cellular or physiologic intelligence. Out of this great mine of unconscious wisdom we quarry rich gems of our individual, willed, or conscious intelligence, and the progress of all personality as of all civilization consists in adopting the intelligence of the unconscious as that of our personal wills. The work of all true life and evolution is to transform cellular or physiologic wisdom and morality into conscious willed intelligence and morality.

Look sharply at the plant-world. Plants are prevented from showing individual intelligence by the fact that they have no powers of locomotion, and therefore do not need a centralized nervous system that is the agent of bringing cellular consciousness to personal consciousness. But they choose, they show emotions, likes and dislikes, and they have evident joys and sorrows. If you don't think so it is not the fault of the plant. It sees more without eyes than you do with them!

In the animal world the conditions permitting the development and showing of intelligence depend upon—

1. The Sensitiveness and Amplitude of Sensitive Surface Exposed to the External World.—This is a

great and beautiful law, a key that unlocks thousands of mysteries for us. The interposition of hoofs between the feet and the ground is the most noticeable illustration. The hard hoof prevents knowledge of the ground, and the perceptions are not sharpened. All hard-footed animals are, as a rule, less intelligent than soft-footed animals. The possession of other sharpened senses may help to compensate, however. The mobile lip of the horse helps him, and the knowledge of his own body gained by the sensitive tail also aids, as well as his association with man. The hog's nose and rooting propensities account for its relative intelligence over the sheep and other hard-footed brothers. The soft feet of birds is supplemented by the bill and the tongue, and especially by the wings. The mobile lips of the dog, his tongue, his expressive tail, together with his association with man have aided his soft sensitive feet to develop his intelligence greatly. The same may be said of the cat. But, it is the trunk of the elephant, one of the most remarkable physiologic structures in the world, that has made this wonderful animal the most intelligent of all, except the monkey, who has learned to use his front feet as hands, and thus (the prehensile tail and mode of life aiding), of all animals he has been put in the most intimate connection with the world.

The second great condition of expression of animal intelligence relates to **the extent of the external world thus known**. The lowest degree, life in one element alone, will give very limited knowledge, as, *e. g.*, of the earth alone, as in animals that live in the ground deprived of the light. But even here the contact of the whole body with the earth greatly enhances the possibilities of sensitiveness and recompenses the mole, for instance, for his little range of media. Fish are relatively stupid because of the single medium they know, but they have a large and sensitive surface in the fin and tail and mouth, to compensate.

They have also good eyes. They have, however, no hearing as we know it, though they have a perception of vibrations and jars.

The space even in one medium over which locomotion extends also conditions the intelligence. Wide-roaming, easily-moving animals are smarter than stay-at-homes. Locomotion calls for vision, and vision is the very *sine qua non* of conscious intelligence, or that under the control of the will. Some animals that move about freely when young, with eyes and other important organs, lose their eyes and senses when they attach themselves to one spot and become plant-like in habits.

Those animals which know the air alone are also handicapped. But the bat has developed such a sensitiveness of his interdigital membranes that he detects the relative density of the air near objects by this means alone, and is thus able, though blind or in the dark, to avoid objects perfectly.

Most air-livers have soft, sensitive feet, as well as the wonderful wings, so that they know two media, the air, and such solid objects as trees, the ground, etc. The greater number of these media known, the greater the intelligence, other things being equal. So that amphibious birds, those also that swim as well as fly, are relatively nobler than those that fly alone. If they have good walking powers on land, this also helps.

3. The Development of Intellect also Depends on the Relative Development of the Senses.—Fishes are put to a disadvantage by a lack of the senses of hearing and of smell. Snakes are also without the sense of hearing, but their long, lithe, soft bodies help them to know the ground, and by a peculiar structure of the ribs and scales each scale becomes almost a foot, so that getting a hundred little leverages on inequalities, *e. g.*, of bark, some of them can crawl slowly up an almost perpendicular surface.

Deer and dogs have an astounding development of the sense of smell which helps them greatly, as a hundred hunters' stories tell us.

4. **Length of Life** is also a noteworthy condition of mental development. The elephant with its hundred years of life, has a great advantage in learning and remembering experiences over his less long-living relatives. Things that live but for an hour or a day know but one instinct.

5. **Association with Man** is lastly a powerful helper of intelligence. Our domestic animals imitate and learn of us with avidity. Some dogs have learned to understand ordinary conversation. Chickens are slow in this respect, because their feet are hard, they have lost the power of flying, etc.

Thus, what an understanding of the world we get by sympathetic observation of life! Universal cellular intelligence is aided in becoming specifically manifest, or in becoming the instrument of the individual will, by the sensitiveness and amplitude of the bodily exposure to contact with the world thus sensed; by the relative development of other senses; by length of life; and by association with man.

But it is especially the **Strength and Exercise of the Maternal Instinct**, which besides governing the unconscious development, and being one of the most fundamental of the conditions of intelligence, is specifically a powerful factor in the production of the intelligence of the genus and of the individual. One of the stupidest of animals, whose feet are hard, whose lips and tail are in this respect useless, the sheep, may be spurred to ingenuity by love, as by no other thing. A patient told me of a mother sheep which had no milk for her little one. It only needed one experience to teach her, when her lamb bleated with hunger, to run with the little one headlong to the house, a long distance away, where it was fed "by hand" by the kind-

hearted human sisters. Tropical cats know all about artificial respiration. A friend saw a cat take its drowned kitten and roll it up hill, the fore-paws alternately squeezing the lungs at every step; in about half an hour of almost frenzied labor the kitten was resuscitated.

Literature is filled with the devices and marvelous proofs of ingenuity of animal parents in raising and defending their young. The feigning of death of opossums, snakes, and birds; the simulation of wounds, the trailing of wings, the building of nest over nest by the summer yellow bird to prevent the incubation of the egg of the shameless cuckoo, the hiding of snakes under the mother's coils or down her throat, the thousand protective devices and ingenuities—all show how strong a force is maternal love in the development of the intelligence. Opossums leave the marsupial pouch early, and clinging to the mother learn many things of the world very early. Nicols tells a comical story of a young kaola which was taken by a cat to nurse with her own kittens. But the kaola had inherited the habit of riding about on its mother's back, a habit that the pussy foster-mother didn't like at all. But she was very patient about it all. A writer in *Science*, some time ago, tells of the curiosity of a monkey, which in hunting other game on an opossum in his cage, discovered the wonderful pouch full of opossum babies, and examined them with tenderness but profound curiosity. Nicols tells of the laughable attempt of a little kangaroo to find the pouch of its dog foster-mother.

It is frightful to think of the evil that results from the dissociation and alienation of humanity from animals, or, what is worse, from the nasty habit of considering them as soulless slaves to be used, or as targets to be shot at. When I see some savage human female riding about the streets behind horses whose necks are suffering from infernal check-reins, and whose eyes are rubbed sore by stupid

blindness, driven by a fool who knows nothing of horse-character, I feel very much like wishing to pull that creature out of her cushions, cut off her hair, stick a bit in her mouth, and yank her head back in the same way as she has done with her horses. What else but having been brought up with animals and thus learning how lovable they are, will ever eradicate out of fiendish humans the idea that when they have an hour or a day to spare from their work of plundering their fellow-men they must spend it in murdering some animal. Let's go out and kill something! That is sport! And, of course, woman will never permit men to be worse than she can be, and so goes on the insane and awful destruction of our birds, of beautiful winged life all over the globe. Beware of a woman with a bird on her hat!

What genuine and delightful happiness these little beings give us! I shall always look back to the days when my dog and I played hide-and-seek in the woods for hours together, and I regret nothing more than the fact that I was unjust or harsh to him once or twice. Knowledge and sympathetic study of animals teaches one more and truer psychology than all the books can do, because in their artlessness they show the secret springs of motive, and of evolution, and form a mirror wherein one may see himself reflected.

Just one glimpse of the "one touch of nature which makes the whole world kin." Does this anecdote by Kipling Sr., not recall the relations of some human couples we have known?

"One morning there came a monkey chieftain, weak and limping, having evidently been worsted in a severe fight with another of his own kind. One hand hung powerless, his face and eyes bore terrible traces of battle, and he hobbled slowly along with a pathetic air of suffering, supporting himself on the shoulder of a

female, a wife, the only member of his clan who had remained faithful to him after his defeat. We threw them bread and raisins, and the wounded warrior carefully stowed the greater part away in his cheek-pouch. The faithful wife, seeing her opportunity, sprang on him, holding fast his one sound hand, and opening his mouth she deftly scooped out the store of raisins; then she sat and ate them very calmly at a safe distance, while he mowed and chattered in impotent rage. He knew that without her help he could not reach home, and was fain to wait with what patience he might till the raisins were finished. It was a sad sight, but, like more sad sights, touched with the light of comedy. This was probably her first chance of disobedience or of self-assertion in her whole life, and I am afraid she thoroughly enjoyed it. Then she led him away, possibly to teach him more salutary lessons of this modern and 'advanced' sort, so that at the last he would go to another life with a meek and chastened soul."

We have seen that the absolute condition of the existence of the human and animal world depends instantly and continuously upon the secret of the fabrication and storing of food about her seed-children, by the Chemist-Mother of the plant-world. The existence of the living world depends then upon mother-love and upon mother-foresight for food, the primal condition of life-perpetuation.

But not only for food, but for the feeding itself. The lambent flame of limpid love that burns in the startled wondrous mother-eye of cow, or dog, or human mother, as she gazes down upon her little nursling, is perhaps the most revelatory thing in the world. All the world loves a mother, and all mothers, human or animal, are sisters. A common passion links and unifies them all and makes them alike holy, all commissioned by another mother-heart to be sharers in a divine duty. Step into a pigeon loft. There is one bird which a few hours ago was liberated 250 miles out at sea. He was taken there in a closed basket. He

knew nothing of compasses, of astronomy, or of steamers and oceans, but when the basket-cover was raised, by the guidance of an "instinct" the nature or mechanism of which we know utterly nothing, he darted toward home, toward the place of his duties as monogamous husband and as caretaker of the young. Without indecision or varying he came straight to his home over hundreds of miles of water, where no landmarks existed. At once he begins his domestic duty of driving and tormenting his wife toward the nest. The imperious fellow will brook no shilly-shallying. Eggs must be laid! *Voilà tout!* When there are enough of them they must be hatched, which on occasion he will help to do, turning the eggs regularly, bringing the outside ones toward the center, etc., so that all the children shall be born together. When the young are there he has an abundance of "soft food" macerated, in his crop, a kind of bird-milk, ready to feed them until their digestive powers are ready for common food. The mother may now go about her business of getting ready for more eggs, and the mother-father attends to the babies, teaching them by and by where to go for food, etc., etc. Who taught the mother to *stand* over the already laid eggs instead of sitting on them, before the time of incubation of the whole lot should begin? Who formed each wondrous egg with such provisions that the "white" or food of the young unhatched chick should surround the yolk, and again the yolk about the germinal vesicle, and about all the encasing, protecting shell, with pores or breathing spaces through it for the chick's supply of air?

"The section of an egg proceeding from the outside to the center, shows, first, an outer layer of calcareous matter containing the coloring pigment, then the inner layer, both being penetrated by minute canals for the admission of air when the shell is dry. Next within lies the shell membrane, which is

separated at the larger end of the egg into a double layer, and includes a small air-space, which increases in size as the egg grows stale and becomes unfit for incubation. Immediately in contact with the shell membrane is the albumen, or white viscous fluid, and again within that the vitellus, or yolk, containing the germ enclosed in its own membrane, and *lighter* than the albumen. The difference in specific gravity between the yolk and white is made, by a singular contrivance, to promote the development of the germ most effectually. From each side of the yolk in the direction of the long axis of the egg, proceeds a cord of condensed albumen extending towards, but not meeting, the end of the egg, and vulgarly called 'the tread,' under the erroneous impression that it represents the influence of the male. Between those cords,—one passing toward the large and the other toward the small end of the egg—the yolk is, as it were, slung in the albumen. Thus while the germinal vesicle on the outside of the yolk is prevented from coming into actual contact with the interior of the shell by its 'moorings' in the denser substance of the albumen, the lightness of the yolk determines it to float toward the surface, and the cords allow it to go just so far as is sufficient to keep the germ spot always nearer the upper side of the egg, whichever way it may be turned on its axis. Consequently, that part of the yolk where the most vital part is situated remains, in all circumstances, nearest the source of heat, the mother's body."

Let me also sketch for you the cares of another mother. This mother, though a vertebrate, has had to develop the hind legs and arches of the pelvic bones in such a way that the young have to be born very early, so early indeed that there is no placental connection with the mother, no blood-feeding of the kangaroo baby before its birth. When born, indeed, it is merely an egg, without a shell, an inch long, a helpless bit of fragile protoplasm. Only a kangaroo mother could care for such a baby. This she does by sticking it in a wonderful pouch of skin beneath her body, and how this

is done, and how the nipple is got into the mouth and clear down the throat into the stomach of the unformed, muscleless, motionless bundle, are mysteries of kangaroo motherhood. What is still more wonderful is, however, understood. Without formed muscles there can be no suckling, but nature is, as always, equal to the emergency. The muscles are in the mother's breasts, and she can extrude the milk at will. Another bit of "special design" is required by the fact that as the kangaroo babies grow (the mother moving by jumps, as all know) their weight would burst the marsupial pouch if it were not braced and supported by the marsupial bones which grow out beneath it, and are thought to be ossified tendons of the external oblique muscles.

The pursuit of food for mate and little ones is, as we have seen, a more subtle but active cause of mental growth. The swifts in building their nests (the edible birds' nests of the Chinese) out of inspissated mucus from the large salivary glands, thus transform a weight of material much greater than that of their own body into this gelatinous substance. This drain on the system is so great that if the nest is stolen the second one is not, as was the first, white and pure, free from foreign substances, but is made up largely of feathers, hair, etc. Gould took from the lining of the nest of a long-tailed titmouse some 2000 feathers. The body of the nest was made up of lichen, moss, hair, etc. The weight of the eggs of one sitting is much more than that of her own body, and this expenditure of energy in nest-building and egg-bearing is in all birds relatively enormous. Doubtless to feed the nurselings a bird ordinarily flies from 300 to 500 miles a day—with how many wing-strokes to the mile? To illustrate the cooperation of the purely physiologic or unconscious processes of the body with the birds' willed or conscious work, it may be noted that during incubation the temperature of the mother's

body rises several degrees. God helps mothers! In this connection also it may be noted that the hornbill feeds his wife and young ones (whom he has securely walled in their nest) through a little hole, with the prepared and regurgitated food, in a bag or pellicle, derived of course from the lining membrane of his own stomach.

The genesial instinct is more plainly the origin of educational ingenuity in birds than in other animals. No two species of birds build nests exactly alike, and the mechanic and artistic ability of some is astonishing. That mother-love in birds begins and carries on the education and elevation of mentality there can be no doubt. It is certainly at the bottom of that astounding fact, bird-migration, a phenomenon of wonderful significance in the distribution of the flora, and even of the fauna of the whole world.

But the same dominant desire also, I judge, governs the entire habits, distribution, and character of all animals. To find a lair or place of safety for mother and young, and to secure food for those at home, must dictate the place of living, and thus, finally, the type morphologically and psychologically of every species of animals. The ability to elude enemies by a thousand devices must form mental habits according to the peculiarities and the length of time of those habits. Volumes might be and have been written describing the myriad means of securing safety and food, and for starting the youngsters in life so that they shall be able to do the same thing again. Pigeons leave the nuts abundant in a thousand trees where they are raising their young, and fly hundreds of miles to get their food, so that when hatched the weak-winged youngsters shall have food in plenty where they are. To illustrate this fact let me describe one thing I have not seen in print, and which shows the instant and incessant government by the reproductive instinct: A patient from Mexico tells me he has about 1000 brood mares on his ranch. Each stallion

defends and commands from 15 to 30 mares, according to his fighting ability. He keeps his family always distinct from every other, and this segregation is so rigid that when the whole thousand are "rounded up" and driven pell-mell into a corral it takes the stallions perhaps hours of intense running, neighing, whinnying, fighting, and hunting, before each has his flock separated by winding but clearly-defined alley-like spaces between each group. Then the men may enter! When running loose, if one group comes near another, one leader may try to drive or woo a mare of another family, at once resulting in a pitched battle between the two leaders. The fighting is done largely on the hind feet, the fore legs little used, the aim being to seize the other's neck with the mouth. If one gets a good "hold" in this way the result of the battle and the possession of the object of battle is soon settled. The period of gestation of the horse is eleven months. My informant knows that it several times occurred in one family that colts born nine or ten months *after* a mare had been placed in the family were at once kicked to death by the jealously-wise head of the family, who had not been consulted in regard to the matter.

A number of amphibious animals have the trick of living long beneath the water, and of keeping the submerged body entirely out of sight while exposing the tips of the nostrils to breathe. To find a home and security for his family the beaver has developed a marvelous degree of reason and architectural genius that has long been the admiration of man, and is superior to that of the bee. The platypus burrows in the bank of a stream, one tunnel entering below the surface of the water, another above it, and both leading to the nest. Thus he can use either and escape all observant enemies.

It seems at present impossible to estimate the due proportion of influence this necessity of nest-making, cave-

homing, and lair-devising, all for the young, has had in developing ingenuity and mentality in animals, but I cannot doubt it has been the preponderating influence, direct and indirect, in spurring *one* species of animal into the human. Archeology and anthropology teem with hints and proofs of this fact. Home-making lies at the basis of all progress out of animality into humanity, and of all advances out of savagery into civilization. And is it not plain that the family-relation is the direct product and machinery of maternal love in its large sense? Every element of the most complex civilization springs from or is vitally related with the home-making industry. Mere food, until a high degree of civilization is reached, is perishable almost in an hour, and therefore is the object of the hour's need; but possession of *one* place of meeting, or of seclusion, begets the fact of ownership. Tools, investments, houses, all things manufactured or durable, become possessions, and hence arises the conception of property, and the entire legal aspect of human relationship is thus seen to spring out of the family relation and flows inevitably from that relation.

One of the most sympathetic and open-eyed observers of animal life, Hudson, says that most all wild animals have their games, dances, plays, or amusements, and especially all birds. What an influence love exercises in the formation of plumage, coloration, forms and habits, of all animals is now known of all biologists, indeed, of all intelligent people. Certain it is, therefore, that most all beauty in the animal world (and of course in the world of flowers it is wholly true) springs from some phase of maternal love. An oriental proverb says that "even the young of the ass is beautiful!" Childhood, either of plant, of animal, or of man, is the one superlative exhibition of beauty. A glimpse, a perfume, a flashing and gleaming of something superhumanly, supernaturally beautiful, lingers long and

caressingly about all young things. The greatest picture, the ever-painted model, the never-realized ideal of art-excellence, is the mother and her child. Whatever power for good or evil from Troy-times to present-times womanly beauty and charm has had in human life,—surely the whole of it can be credited or debited to but one thing. Art, whether in poesy, drama, novel, sculpture, or painting, is simply myriad-phased love. Back through all forms of life, clear to the protozoa, the beautiful is linked with the maternal in indissoluble unity. Estheticism, art, all that charms and delights, is the reward and benediction of the divine Father and his pleasure in the renewal of living forms.

Now, exactly the same truth applies to morality, or the emotion of altruism! In all family life when the sexual or family relation is not in action, there is selfishness, utter indifference, or positive enmity always manifest. The principles of individuation, the struggle for existence, the preservation of self, called the first law of life (but wrongly so-called), have unlimited and absolutely exclusive sway of all beings and functions, except when love and the care of the young come in to contradict and overrule them. Maternal love is the miracle of all biologic existence. It cannot be conceived as arising by any action of "environment" or from the necessities of the organism standing nakedly there. Into every life, nay, into every fiber, bone, and cell of every living thing, the great God, Love, stoops down and permeates, nay, He clutches and masters each for a purpose beyond and after. From the standpoint of present-day science, from the standpoint of determinism, fate or chance, from the standpoint of the agnostic, or of his twin-brother, the atheist, this maternal-paternal love, this all-powerful, all-forming, and all-transforming energy is the most illogical, most uncaused, most utterly unaccountable thing conceivable. We can explain all things else in some

half-blundering, half-satisfactory way, but for this exotic wonder there is no scientific accounting that would not make a mummy laugh. It is, it comes to us from without, and that is all we can say. It is the one patent, convincing, unanswerable proof of the divine, or the supernatural, entering and grasping the organic mechanism for ends beyond that organism itself. And its first, last, continuous, and increasing effect is to make every organism value and cherish a being that is not self. It is therefore the very basis and essence of all that is ethical and religious. Every animal is put in training by it for humanization, and becomes through it a faultless illustration for us of the supernaturalism and the glory of ethics and of other-love. To the childless a hundred animal stories teach that there are orphans we should make our own children. Alas! The heart-broken sadness, the pathos beyond tears of the motherless. Read Kipling's *Baa, Baa, Black Sheep*, and then think of what is going on in the breasts of thousands of children in the "barrack-schools" of England, and in the orphan asylums of America.

The limits within which the role of the maternal instinct is confined are more rigid in the animal world than in the human. I doubt if any one knows anything about the old bachelors and old maids there. Of course, there are but few such, but these few must occupy strange positions in life. After the productive age has passed, one wonders if wild animals keep up the relics of family life. Probably not, I fear. At least, one species of birds, the cuckoos, are sharp little scoundrels. They build no nests, and carrying their eggs in their mouths, slip them into the nests of other birds, where they are hatched some days in advance of the eggs of the rightful owners. Then with characteristic inhumanity, or unbirdity, they proceed to gobble up all the food and kick out of the nest the rightful children. Male birds often arrive in migration from their thousands of miles

of flight before their mates, but the same mates do come, and they come year after year to the same locality and rebuild their nests in the same identical spot. This home-attachment has numerous illustrations. A water-wagtail once built her nest on the framework beneath a railway passenger car, which later was put into local service, running four times a day between Cosham and Havant, in England, in all about forty miles. At this time there were four young birds in the nest, and the little father, while his family were away promenaded the turntable, etc., awaiting the shunting of the car bringing back his wife and babies. A pair of tomtits for three years built their nest in a letter box. All the letters posted fell upon the sitting bird, and the splendid postman gathered the letters and left the birdies.

Among animals the limits of the control of the maternal feeling are rigidly confined to simple necessity. Love seems to disappear as soon as the young can possibly fly and get their food—another proof of its supernatural quality and origin. I have oftener wondered, too, at the general indifference of the father to the young. In many, perhaps most animals, the father seems to care no more for his children than if they were moving bushes. Certainly, he cares no more for his own than for those of another, and the idea of any love toward grandchildren is absurd. Not even the mother shows this.

But it is of the greatest interest to note that with the appearance of humanity and with its ideas of home and of property (both products of maternal love) there arises a natural extension of the scope and control of the family instinct, and the interest of the parents continues into or through adult life. Support and protection of the mother continues beyond the child-bearing period, grandchildren are beloved (sometimes I have noticed, even more than the children themselves were), more distant relatives are held

within the family affection, and the patriarchal type of society is established. When the higher ideals of society and civilization are permitted to arise, the egis of love is extended over the nation, and patriotism with its great influence in war and history appears. Finally, the highest development of humanity arises, and, still an actual outgrowth and extension of maternal love, ethics and love of humanity, and of the divine Father-Mother of humanity, and of all life, takes possession of the loyal being, whether he be social reformer, philosopher, pietist, or religionist.

I fear that I have wearied you : Let me then epitomize the principles about which I have gathered my much-wandering and perhaps incoherent thoughts :—

1. Among the factors of evolution there is one of which scientists have made too little or no account. This comprises the entire grouping as one, of all the instincts variously denominated genesic, sexual, or reproductive, the whole series of the various functions, necessities, and results, going to the begetting, gestation, nourishment, and training of the young. Conceived thus in its entirety we may, for want of a better name, denominate it maternal love.

2. In the vegetable this energy largely and entirely dictates the morphology and physiology of all types and species of plants, and is the sole factor in their flowering, seed-forming, and in the phenomenon of growth.

3. The stored food, fashioned by the cunning and secret chemistry of the plant, and provided by maternal love for the first nourishment of its young in the seed, is the ultimate source of nourishment of the entire animal world, humanity, of course, included.

4. In the animal world the maternal sentiment more largely than any other or all other causes, leads directly or indirectly to the development of ingenuity, nest-building, and other forms of home-making, and hence to mental evolution and progress to higher types.

5. It is doubtless in this special way the prepotent factor in the humanization of the one genus or species of animal from which we have sprung.

6. In the human race it has been the dominant influence in the formation and progressive growth of society through its effects in the creation of property and private rights, and in the founding of homes, of families, etc.

7. In both the animal and the human race it has been almost the sole source of the appreciation, ideals, and facts of esthetics, all forms of art drawing their inspiration and data primarily or at second hand from its exhibition and function.

8. Religion and the belief in the supernatural apart, there is not, so far as we can see, any other cause that has been in the least operative in producing, throughout all biologic history, any ethical or altruistic fact or function whatsoever. To this great instinct is entirely due all the practices operative in plant or animal for the welfare of any other than self. And in the highest society of to-day every ethical act derives, directly or indirectly, from it.

9. Almost all other evolutionary factors may be more or less satisfactorily accounted for on theories of "natural" causes, such as "natural selection," the persistence and correlation of energy, the "sensitiveness of protoplasm," etc., etc., but viewed in its singleness or in its entirety, this instinct, so far as our intelligence can judge, is plainly uncaused and inexplicable, and, to put it boldly, is a miracle, thrust among all other natural forces, and dominating all for its half-hidden, half-revealed purposes.

May I relate a dream?

I thought that maternal love and all pertaining thereto ceased appearing in our world because mankind did not appreciate the beautiful and gratuitous gift, and were so ungrateful, even abusive of it, that God grew tired thrust-

ing it upon us. Men and women had grown so callous that they took upon themselves the awful duties of parenthood, and then neglected their children. They made orphans by thousands and then left them to be cared for in horrible asylums, their tender, unpracticed, unguided longings bruised, or like cellar-plants, left groping for hidden light. They ruthlessly killed and destroyed all things for selfishness and amusement.

And so, in my dream, all that related to maternal love silently ceased to be, and I wandered among strange-seeming people and profoundly changed scenes. The whole animal world became other; ornament, color, gay feather and lightsome song gave place to sad makeshifts of utilitarian hair, bristles, splotches, screeches, and grunts. Even in the eyes and faces of my best friends all became different, hopelessly pitying or inhumanly hard; deep-seated selfishness gleamed upon one everywhere from snake-like eyes. Smiles one never met, but an occasional *risus diaboli*; cachinations of derision or ridicule were heard, for men and all things were painfully grotesque and altered in appearance. Men jeered at each other because all beards had disappeared; the glory of woman's hair had also gone. Worse than this, the beauty faded out of woman's form and feature, and instead of the divine charm of laughing eyes and radiant winsomeness, they all became half or wholly repulsive, coarse, much like men, and yet without the dignity or strength of men. The men had likewise become womanish without becoming in the least degree womanly. The beautiful, except perhaps the flash of moon on wave or sun on mountain-top, had gone out of the world.

No children were born, and those that existed were thrust out to die or live neglected, or were fed out of illogic pity. There was not a flower in the world. Almost all human social gatherings ceased; why should people meet together now, when they had no pleasure in each other,

and when each looked on the other thinking only how his money could be gotten away from him? Men left their homes and were never heard of again, and in all places strangers, uncouth, ill-clothed, brutal, and cruel, came and went in objectless ebb and flow. Who had wealth turned it into gold or portable goods. All commercial credit ceased; banks closed their doors; every one barricaded his house, and went about "armed to the teeth." The iron-mills and rolling-mills went on, and many manufactories, but everywhere was harshness, and grind, and ugliness. Despair and idiocy, and crime and insanity instantly increased a hundred-fold. An awful shudder, a cosmic horror crept like cold snakes through the arteries; the blood curdled in all hearts. Women whispered to men an awful message, and men moaned it to each other; hungry-eyed dogs divined it in their masters' eyes; it ran like doom along the branches of the leafless trees, down to the roots, and there every mole and insect was frozen with terror of it. God is dead!—were the agonizing words that palsied thought and emotion, and that clutched at the life-springs of every bosom.

Slowly the prices of everything commenced rising and famine began. It was found during the second year that the stock of grain was nearly or quite exhausted. Seed sowed in the ground came up, but there was no new seed formed. The cattle had died off in great numbers during the first and second winters because the owners kept the little corn that was left to still their own personal hunger. No calves or lambs were born, no chickens hatched, and the older animals could not get enough grass, leaves, or roots during the summer to carry them into the next winter, the third, when death would surely come. But they were not allowed to live that long; and during this second year every animal all over the world and of whatsoever kind that could be reached by the ingenuity of

man's hunger had been sacrificed. Then began universal famine, cannibalism, and unutterable horror. Everywhere was death, and death was everywhere. Within two years from the death of love there was naught but death. Rocks and sand and waters there were, a desert-world just like that before the angel of maternal love came among the rocks and sands and waters, and made out of them the world we know, the world of grain and fruit, the world of sweet, cool grass, the world of rustling leaves, the world of beautiful, wonderful animal forms, the world of friends, the world of baby-faces,—the world of God!

LIFE AND ITS PHYSICAL BASIS.*

In a letter from a famous thinker and writer lately received, commenting upon some statement concerning a physiologic function, my correspondent writes: "I am, as a physiologist, quite opposed to regarding life as an entity instead of a function." With this bit of unscientific dogmatism a popular plebifactor of science is well satisfied and proceeds in this way: "Chemistry has now told us that 'Life' as an entity has no more existence than the phlogiston of the earlier chemists, and that the series of phenomena to which we give the name of life are changes undergone by complex compounds of carbon composing very large and unstable compounds." The only proper answer to this is a choice example of curbstone slang, more forcible than polite. It is itself a compound, "very large and unstable," but of simple construction, being made up of about equal parts of lie, ignorance, and impertinence, in mechanical mixture, not chemical union.† Such things are to be regretted because they harm the advance of true science, a matter in which we all have the most vital and vivid interest. But the unscientific prejudice of many like my correspondent, who think they find in physiologic and biologic studies confirmation of a materialistic creed, is

* A paper read before several societies.

† In the best, most recent and most scientific text-book on the subject I know of, I find these words: "The chemical operations performed by the living cell cannot be imitated in the laboratory, or explained by any known chemical laws." (Halliburton, Handbook of Chemical Physiology and Pathology, p. 210.)

chiefly to be regretted for their personal sakes ; they miss so much and narrow their minds quite unnecessarily. No man ever saw anything that in the remotest degree could logically suggest that life is a function of matter ; there is not a biologic fact that does not demonstrate the contrary ; and yet these unscientific philosophers pretend that they are pupils in a school that at matriculation demands freedom from dogma, and induction only after patient study of facts. To the student of the history of thought these dogmatists are seen to be simply the dupes of a psychologic zeitgeist of reaction from past theologic dogma. Scientific dogmatism has the advantage over the religious variety in being sooner exposed and shorter-lived, but it is altogether more inexcusable.

I would be glad in the interests of a monistic faith to see any means of escape from the dualism of life and matter, but frankly observing the facts I do not see the least loop-hole of any such possible escape. In addition to the chemic elements and their compounds, we include under the term matter, the ether with its functions of light, heat, electricity and magnetism. These, with the chemic elements and their compounds, are all governed absolutely by the laws of the physical or mechanic forces, and compose the material universe. This material universe gives me no hint of design or designer. Frantic attempts have been made to argue its derived existence from the fact, first of its orderliness. But in the first place what order exists is generally more apparent than real, and it is easily forgotten that there exists the most astonishing jumble and disorder as characteristics of great parts if not the most of the physical universe, in the oceans, in the facts of meteorology, in the Arctic regions, in the configuration and structure of the earth's crust, in the meteors and other examples of disorder in the solar or stellar systems. In the second place, the order observable is always the

result of the law of gravity ; the stratification of the earth's crust, the flow of rivers, the revolutions of the planets, the very formation of planets and systems, lastly and of most importance, the formation of the molecule and of all chemical combinations and laws, seem all to be simple instances of the results of gravity. Now if one finds evidence of a creator in gravity and gravity-produced order, his mind is differently formed from mine. Another argument that has been relied on is a supposed logical necessity to ascribe to a cause whatever exists ; " matter must have been created because it could not have created itself." All the logic in this lies in the equally true paradox, God must have been created because He could not have created Himself. It is only when design and purpose and nonmechanical reactions distinguish a thing that logic requires its reference to a designer. We do not dream of attempting to fathom the origin of life, but when nonliving matter shows living forces and mentality, we must ascribe these to something extramaterial. " The final and strongest defense of the argument for a derived origin of matter consists in the uniformity of size and nature of all the atoms of one element. Identity requires explanation. All the atoms of hydrogen are identical. If the result of chance, they would have been of infinite variety of size and qualities." In answer to this it might be said that in the infinite attritions of an infinite universe in infinite time, like atoms would necessarily be produced and be gathered together. In a shot tower the simple fact of descent sorts the different sized shot with mathematical exactness. The heavier fall the faster. Space is infinite—an endless shot tower—and gravity almost alone would sort varieties of atoms into classes. The sixty or seventy varieties of elements are possibly the chance-groupings or gravity-sortings, and classes, of the atoms. The mechanic law of " Natural selection " would apply here in a way it cannot apply elsewhere. The atoms that

vary from the greater average would fall of themselves to another class, or would quickly be ground to uniformity by the attrition of their fellows.

It is life alone that gives incontrovertible evidence of divinity—not of an omnipotent or omniscient one—but of one that by the very fact that he is finite and working under difficulties brings him all the nearer to our hearts and makes love and veneration the spontaneous offering of all sane minds and sympathetic hearts. Untouched by life the universe would be in the condition of the moon, without a vestige of any living thing. The transcendent metamorphosis worked by life is hardly to be realized by one who has not stood in the awful desolation of some wholly lifeless region. The vegetable world, and it alone is able to evolve from inorganic materials a true but probably a comparatively simple protoplasm. The higher animal is utterly dependent upon this power of the plant, relying for its food upon the formed protoplasm robbed from the vegetable kingdom. The fact shows the essential unity of the plant and animal worlds, and emphasizes the fundamental difference of the world of life over against the world of dead matter. The two are entirely uncorrelated phases of being, no monistic faith or philosophy offering a hint of any hidden unity or identity of the two. The ingenuous perception and conviction of their utter disparity is the faith of mankind. To assert the nonexistence or the derived nature of either is philosophic moonshine. There is no dexterity of mental gymnastics that renders thinkable the creation or annihilation of matter, or the generation out of it of life or mentality. All sane thinking must at the outset posit as axiomatic these two independent and underived forms of Being.

The Chemic Molecule.—The most striking characteristic of an inorganic molecule is that it is a rigidly mechanical system. It has no spontaneous movement, and

no adaptive reactions, except such as are mechanically predictable; under given circumstances, thermic and mechanic, its component elements being present, it will always form; under a definite impact of heat it will always break up into its elements. As a matter of convenience we speak of it as reacting, but it rightly has no reaction, being only acted upon;—it is dead, movable only from without. In forming, a definite and invariable amount of heat is absorbed, and the same amount being again given it, it at once breaks up into its constituent parts. Heat being the indicator of atomic vibration, thermo-chemistry would be a science, if perfected, of surpassing exactness, and would indicate by a heat-equivalent, the precise constitution and condition of every compound. It would be the record of the exact number and extent of path of its atomic vibrations—all that we could desire to know about it. It would constitute the astronomy of the molecule. Because, it would appear that in a final analysis, gravity almost or quite explains the intimate interactions of the molecule's parts, as it does those of the elements of the solar system, the vibrations of the atoms doubtless following the same laws as the planets in their circuits. Every molecule, we know, is a closed and unitary system, its elements never in contact, but ever in ceaseless vibration, with varying rapidities and extent of path. The vibrations of the ether penetrate the densest bodies, showing that the atoms move wide apart from each other like the planets. The moving planet by displacing the circumambient ether, may possibly create a slight ether-breeze, as, many miles per second, it darts through space; it may be likened to an almost frictionless net passing through water, or a zephyr through a leafless tree. Hertz passed electric or ether-vibrations quite unchanged through a solid stone wall several feet in thickness, and light seems to escape the atoms of glass much as supposed arrows would escape the planets if shot from a

star through our solar system. A molecule or a mass of molecules is dense just in proportion to the extent of swing of its atoms. Heat is the measure of these swingings or revolutions. Absolute zero in temperature, a calculated thermometric registration of -273°C. would correspond to atomic immobility and absolutely impenetrable density. This is only a reasoned or imagined condition, not only not existing, but beyond experimental production. The number of miles per second traveled by a single atom of the atmosphere of our room is calculated and the number of its collisions with other atoms and the sides of the room. The pressure of the gas in your gas pipe or against the gasometer is simply the sum of the blows of its individual atoms upon the containing sides. The blow of the blacksmith's hammer upon the anvil is the blow of one mass of billions of vibrating atoms upon the mass of billions of other vibrating atoms. The hardness of a body is the common name for the lessened but not stopped swingings of its constituent parts. The softness of a body or its gaseous state is due to the increased vibration of its elements. Give the atoms of a wall of cold steel more "swing" than they already have, and you could walk through the wall as through air. The disruption of a molecule by an increment of heat is effected by a simple increase of the centrifugal force of the atoms like that attending increase of revolution in a body rotating about a fixed center. Increase the speed of Neptune in his orbit and he would be flung off beyond the control of the Sun's gravitation. It is doubtless in this way that the impacts of ether-waves effect chemic changes. If the vibratory period of the ether-wave be identical with that of certain loosely-held elements of the molecule, the disruption is instantaneous, as in the photographer's sensitive plate. Chemic molecules are thus seen to be physical microcosms, ruled by a rigid mechanism. Were our microscopes sufficiently powerful and our

vision sufficiently swift, we should find many varieties of simple and complex systems of intervibrating elements of which our solar system is but a single type, others hidden by our want of a perfect telescope—but whatever the variety, all alike ruled by a simple physical law. The formation of a complex chemic molecule, one composed of numerous varieties of elements, illustrates the law in the definite mathematic proportions of its constituent parts, the relative feebleness or strength of the bonds of union, in the preservation of compound radicals, etc., etc.

The Organic Molecule, or "Somacule."—How does the protoplasmic* or living molecule, or somacule, differ from its inorganic analogue, the chemic molecule? Primarily and profoundly, of course, in that it has life. The materialist says it differs in no important respect. As the sodium chlorid molecule has a property we call saltiness, so the protoplasmic molecule has liveliness, both necessary qualities of their molecular structure—mere functions of the peculiar combinations of the elements of each. It is waste words to ask if the salinity can be taken from salt, leaving the salt there, as the life can be taken from protoplasm, and leave the protoplasm present. It is quite useless to argue with such folk. It is simply a question of perceiving, and when one is congenitally afflicted with this sort of mental strabismus and amblyopia, it is absurd to expect help, except as one says, from a surgical operation. He cannot see that the difference between living matter and dead matter is the greatest difference existing between perceived things.

* The word protoplasm is an unfortunate and misused term. It has no meaning whatever now, having been used to designate such a multitude of differing things. In all probability the substance most commonly spoken of as protoplasm is not living, but is stored nucleus-food. The nomenclature of these things needs reorganization. Until this is done we are forced, for convenience's sake, to use the word as a synonym of living matter.

To be more specific, the somacule differs from the molecule in its amazing complexity of atomic construction. No analysis is possible, the guessings as to the number of constituent atoms differing by many hundreds, some estimating the simplest system to be composed of from three hundred to a thousand. Lieberkühn's formula for albumin is $C_{72}H_{113}N_{18}O_{23}S$; Harnack gives it as $C_{204}H_{322}N_{52}O_{68}S_2$; Schützenberger as $C_{240}H_{392}N_{65}O_{76}S_3$. Inorganic forces can build up no such a complex system as this. It requires a hypermechanic power. If our planetary system were suddenly enriched by one or two thousand dazzling planets, moons, and comets, would not confusion and collision certainly result? Mechanic products like atoms, chemic substances, nails, etc., are characterized by likeness or identity. But all organic products differ one from another. Brothers differ in expression, physical organization, and characteristics. Not even twins are as like as two atoms or two samples of the same chemic compound. It is said that in transfusion of blood the assimilative tissues of one person will not accept the formed corpuscles of another. These have to be broken down and the component materials, not the end-products, used or excreted. All that is gained by transfusion is a sudden supply of nutritive material in an emergency to tide over a temporary and dangerous want. This points to what must be admitted as a fact, that protoplasm is infinitely variable. It is probably true that at no two moments of the existence of a cell is its molecular condition and atomic construction exactly the same. It is probably true that no two cells are exactly of the same constitution. It is almost certainly true that the cells of different organized tissues must differ from each other, one organ requiring cells of wholly different powers and hence of varying constitution, from the cells of another organ. It is beyond question that the general formula of molecular and atomic construc-

tion must differ in each and every individual. A dog can distinguish the smell of the impress of his master's foot or hand from that of every other person in the world. If the volatile particles of cell-metamorphosis differ so continuously and exactly, then the general chemic formula of the cells must necessarily differ. In this way, within limits, the protoplasmic formula of one family must differ from that of another, of one nation or race from other nations and races, etc. Every one recognizes the peculiar body-odor of the African, the Chinese, of certain families of animals, etc. All this is in striking contrast to mechanic products, and it only finds its explanation in the infinite adaptability of life to every material used as food, to every peculiarity of the historic development, and to every change in the environment. Alum, carbon dioxid, or quinin sulphate are the same whether produced a thousand years ago, and however produced, but a living cell, or a living organism, is never duplicated by Nature, every being that has lived on the earth being different from every other that has ever lived or that ever will live.

Since Life works only by and through the individual cell, creating and evermore remolding the cell according to the peculiar work and circumstance, glimpses are caught of purposive and progressive spontaneity and of cosmic import. Mechanicalism has no place or application here. In the bioplastic molecule, Life, the divine architect, builds an exquisite order of bewildering complexity out of the crude materials of simple mechanic vibrating systems, and sits in its midst guiding and utilizing the physical in the interests of the metaphysical. Purpose—a quality unknown in mechanical systems or molecules—is the distinctive characteristic of all living things. The molecule-building power of the inorganic world is the fulcrum of Life, and the release of force by the breaking down of the more complex molecule into the simpler (katabolism) is

the means whereby Life acts within the physical domain. The purposive direction of energy is her one function, and the energy is always derived from the reduction of more complex to less complex compounds. To coin a couple of needed terms—biokinesigenesis (the production of vital energy) is always the product of cytolysis (the disruption of cell-substance), the unlocking of a chemic bond and the release of subjugated atoms. It makes no difference what the form of vital energy may be, whether it be a secreting, contracting, a nervous, or a connective-tissue cell, its every function subsists by reason of a reduction of its substance to a simpler system, ending finally in a change in construction of product, a metamorphosis of molecular into molar motion, a transfer of energy, a support of weight, etc. The analogue of this vital production of energy by cytolysis is the condensation of the solar system, the preservation of the sun's working energy, whilst his total energy is being reduced. Unlike the somacule, the solar system cannot be fed from without, and so its shrinkage and decreasing energy will finally end in stagnation and death. It is from the energy derived from the metabolism of the somacule that life gains the power of preserving a uniform temperature. This power is one of the most striking proofs of nonmechanicalism, of supernaturalism if you please, displayed in organic existence. All life's forces are dependent upon such a condition of atomic vibration, or heat, as will preserve the somacule in the highest state of complexity or unstable equilibrium. So delicately poised must be the molecular balance, that the slightest breath of desire or stimulus can at once release small, large, or continuous increments of energy.* To

* Of the total product of energy or heat evolved by the body, about seven per cent. is used in external mechanical work; of the remainder, four-fifths are lost through the skin, the remaining fifth by the lungs and excreta.

preserve this wonderful equipoise and adjustment is an astounding exhibition of overruling intelligence and watchfulness. Every mechanic system tends to stagnation and death, and must be preserved by extrasystemic additions of force. The physical system, clock, molecule, solar mechanism, or steam engine, cannot recoup itself, cannot prevent the tendency to "run down." Protoplasm alone has a self-preserving and self-regulating power.

Every physician knows the meaning and the danger of fever. With fever, life is losing control of her atoms, the most fundamental condition of her government of organic processes. Centrifugalism is getting the better of centripetalism. With increased atomic vibration there is increased dissipation of force, and dangerous dissolution of the somacule. Katabolism gains upon anabolism. With increased loss there must be increased supply, and this fact gives everlasting warrant for the quaint epitaph of the old physician, "He fed fevers." The preservation of an equable temperature of the body, is the instant, true and genuine miracle continuously performed by life. But if fever is dangerous, a subnormal temperature is far more so. It means death, molecular and somatic. The somacule cannot deliver force if the dance of its constituent atoms is crowded and chilled and lessened. Though submerged in food and water, it dies of starvation and thirst. These things show us how narrow a range of choice and power life has, and how jealously matter imposes upon life its rigid conditions. A few degrees of temperature above the normal is dangerous, a few below is death. If an automatic mechanism governs the uniformity of temperature, its device and perfection must have been a task of long and subtle difficulty. If the materialist prefers to ascribe the production of the wonderful mechanism to his new deity, Natural Selection, one can only answer that the endowment of a mechanic principle with divine powers explains

nothing, and seems no advance upon the elder nomenclature.

The Cell.—The cell may be described as an organized multitude of somacules, corresponding to a universe of solar systems. The atoms correspond to the planets, asteroids, etc., the somacule to the solar system, the cell to the whole of the interrelated suns of one nebula or universe. The harmonic law of stellar relations has not been discovered and therefore the further comparison of the animal body to the interrelations of different masses of nebulae, or universes, if one may be pardoned the absurd expression, becomes meaningless. The somacule is the biologic unit, the cell the physiologic unit. It has been estimated that the smallest living particle visible under the microscope contains about two million molecules of living matter. But this estimate needs two qualifications. The first is that from 80 to 85 per cent. of every protoplasmic mass consists of water; and the second is that a large, if not much the larger part of the cell-mass is composed, not of true living protoplasm but of dead food, not yet transformed into living matter, and of dead waste-product, or excreta, both of which are no part of the true organism. Thus the real living, directing and modifying part of the cell is composed of not more than 10 or 20 millions of somacules. It is this fact that gives the swift beheading stroke to every materialistic theory of heredity and descent. Suppose that every somacule had an individuality and an identity peculiar to itself; would any school-boy deny that the ancestral and racial inheritance of the child from its parent does not in the stupendous multitude of details, outnumber these paltry 20 millions by incalculable millions of millions? The absurdity becomes ludicrous when we further remember that at an early stage of cell-development, these few millions of elements give no evidence of structural difference. Then again if a somacule is to carry from the parent the power

to mold a special organ or tissue of the child, it must learn its lesson in the like tissue of the parent, and having so learned it, must pass thence to ovary or testicle and be incorporated with millions of other cells which have learned their lesson from every other tissue of the parent body. Now every cell of every organ has a certain peculiarity of function, of position, or of nature. Therefore, if we are logical, a germ-cell (or sperm-cell) must serve as pupil under all the tutor-cells of every organ and tissue of the parent-body, and thence proceed to form and develop first the ovum or spermatozoid, and then the child-body. But if this is an absolute logical demand, the total mass of the cells of the ovum must equal in number those of the parent-body. That is, the ovum is as large as the adult parent! This *reductio ad absurdum* is but one of the innumerable logical quagmires in which one finds himself wallowing who sets out to follow the Will-o-the-wisp of materialism. If it be supposed that a speck of bioplasm $\frac{1}{8750}$ of an inch in diameter as a physical mechanic system contains the billionfold results of millions of years of past ancestral experience, one can but ask as to the mechanism of such preservation and transfer of ovogenetic gemmules. Of what avail is it to endow the mechanic molecule with a self-created omniscience, omnipotence, and infinite cunning? Does one think thereby to get rid of a hated teleology? It is only evidence of inextinguishable obtuseness. It would seem more sensible to call God by the old name than to dub him *Protoplasm*.

Cell-Assimilation.—The protoplasmic cell is a food-seeking, food-digesting, and food-assimilating organism. A very small part is really the seat and organ of life; the bulk is dead food or dead excreta. It is a minute egg, the living germ or dominating part being a fractional part, the rest a magazine of stored food for the use of the growing and reproducing individual. In that universe of cells, the

animal body, it is much the same. The actually living protoplasm is but a part of the total body weight. Just at what instant in the process of assimilation the dead food becomes the living protoplasm, it is impossible to say, but it seems probable that true directive energy and life only fully inhabit the formed but yet functional tissue. In that amazing and subtle process beginning with the crude food at the mouth, and ending with the most complex cell of the acting, fixed tissue, there is a long, intricate series of substances and metamorphoses of progressively ascending complexity and unstable equilibrium into which life has only a partial and progressive ability to enter and dominate to her purposes. The methods of effecting this metamorphosis are towards the last of the most exquisite delicacy and subtlety; but from the first the handling is less and less molar and mechanical, ever more chemical and vital. Previous to the final cell-finishing and fitting, Life cannot have her proper house-warming and full reception, but must fashion, and furnish, and manipulate from without, by tools and agents, as it were, until finally, by indwelling agency, when the living pump, the heart and its adjuncts, have brought the almost completed food-product to the living cell of the fixed tissue, mechanics are at an end, and the metabolism is thenceforward so far hidden from our deepest scrutiny.

Cytogenesis.—An important fact in reference to the existence of protoplasm is that only life can produce it. There has never, so far as we can find out, been a living cell produced except from a preexistent living cell. It requires protoplasm, and living protoplasm to beget its like. Nothing is deader than the absurd theory of spontaneous generation. In the light of the complex vibratory nature of all organic compounds, what theory could be more ludicrous? Even the most empty-headed of materialists now steer clear of the hypothesis—an hypothesis by

the way, absolutely foundational to their whole belief and creed. To reduce by heat a lot of living matter, the labyrinthine intricacy, and marvelous complexity of whose vibrating systems no human mind can gain but the faintest glimpses, to a jumble of indiscriminate atoms, and then expect highly organized and living vibratory systems to arise spontaneously, this is the limit of nonsense. It were as absurd to pulverize a thousand watches in a mortar and expect much shaking to again bring forth watches. Since life is an independent force existing apart from all matter, and since it creates protoplasm, it becomes sure that, *in a certain sense*, spontaneous generation did at one time, or first, occur. The absoluteness of the truth, *omne vivum ex vivo* is simply a proof of the labor life has had to get a foothold in matter, and the advantage in a foothold once gained. However great, the miracle of present assimilation is not so great as that of *first* impressing inorganic vibrating systems into protoplasmic service. The foothold once secured it is easier to draw in mechanic systems and endow them with life than it is to create anew the lowest type of living matter. Hence the fundamental necessity and reason of the great scientific truth of Evolution. It is always easier for life to proceed from present capacity and advantage than to originate new forms. Reproduction, growth, and modification are easier than *de novo* production. How life conquered the *first* tremendous difficulty of once getting entrance to and control of a simple physical vibrating system is at present beyond our possibility of thought. But proof that life can convert mechanic systems of vibrating atoms into protoplasm is not needed: it is the ever-present miracle of the growth of organic forms. An oak germ in its lifetime, from purely inorganic materials, transforms into protoplasm tons of inert matter, lifts thousands of tons a hundred feet high, transforms other thousands into the semi-living tissue we

call wood, etc. The difficulty life has had in first gaining entrance to a mechanic system—*i. e.*, the difficulty of spontaneous generation—has led two acute thinkers to suppose living germs must first have been brought to our planet from some other by a wandering meteor. But whence came life to the other planet? The theory seems to be no more probable than that the first and lowest vegetable forms arose at life's touch, upon our earth in the dim past. The true "missing link" would be between the highest mechanic or inorganic molecule and the lowest unicellular vegetable protoplasmic cell. All that follows is willingly granted to evolution spiritually conceived. The evolutionist easily "sees men as trees walking." The primal difficulty lay in catching nascent vibratory changes of the most complex and unstable inorganic geometric molecules and utilizing them for domiciliation. We cannot doubt that life was everywhere present and vividly alert to grasp the opportunity, because we now stand in dumb amazement at the tremendous stretch and strain everywhere shown by imperfect and limited protoplasm to grow and extend itself over, above, and through the world, with little less than infinite pertinacity and divine ingenuity.

The Cell-nucleus.—The father of the modern cell-theory, Theodor Schwann, took his hint of the function of the nucleus from the botanist, M. Schleiden, who had observed that the nucleus is the primal source of changes and of division of the vegetable cell. The preexistence of the nucleus in the cell became thenceforth his fundamental principle in the study of the cells of animal life, and he found that all the tissues of whatever kind and variety of the animal body are nothing but transformed cells. These truths are to-day incontrovertible. It is in the nucleus of the cell that biologic interest and micro-chemic investigation center. There can be little doubt that the nucleus is the true living matter. Life has its seat

there. Changes proceed thence. It controls the nutritive and metabolic changes of the cell, and whilst alive is always undergoing these changes. In cell-division it is the nucleus that first divides. "The cytasters and radiating lines in the protoplasm around the poles of the spindle of a dividing cell remind one forcibly of the effect produced by placing a magnet in the midst of some iron filings, the radiating position of the metallic fragments around the poles of the magnet indicating the direction of the lines of force." We know that the nucleus consists of a kind of network or sponge-like cluster of fibrils about and through which is the nuclear matrix of more liquid substance. The nucleoli may be thickened portions of the fibrillæ, or they may float free in the matrix. The chemic construction of the nucleus contains an indefinite number of highly complex substances, such as nuclein, plastin, adenin, etc. As in all such investigations, chemic analysis is here impossible. Nuclein, the more important constituent, shows distinct chemic differences when derived from different sources. No definite chemic unit exists, and it seems probable that the nucleins are members of the numerous class of organic phosphorus-compounds.

Cell-nuclei are divided into two great classes, the resting or nondividing, and the dividing. The term karyokinesis is given to the series of changes taking place in the dividing nucleus. These changes are too intricate and extensive, too little understood, to be detailed here. The stages are described by Waldeyer as:—1. A resting nucleus; 2. The skein or spirem stage; 3. That of the appearance of the achromatic spindle; 4. The equatorial stage and formation of the monaster; 5. Metakinesis; 6. The dyaster or daughter-stage; 7. The dispirem or daughter-skein stage; 8. The resting daughter nuclei. All this is but a manifold naming of some of the crude results of a millionfold, intimate and mysterious series of changes, of whose nature and methods

we are profoundly ignorant. But the central truth that shines forth is that the nucleus of the cell is Life's castle of domiciliation and throne of power. Precisely as an earthly king seated at the center of government, by means of his prime ministers and deputed authority, binds the parts of his nation into a unitary government, and controls all for the common good of all, so does Life rule the kingdom of organic matter through the central seat of government, the cell-nucleus. But one awfully-suggestive inference comes from this:—though the lowliest living beings, vegetable and animal, are unicellular, the bulk of organic beings are multicellular, and an organism like the human body is composed of billions of subjugated cells, of self-forgetting, serving, tireless, cheerful slaves. If life can only operate upon and through matter by the mechanism of the cell-nucleus, then it follows that the life of the individual cell is itself *not* individual. It is itself the appearing of a life common and universal. The point to be emphasized is that in the creation of an organ and an organism, each cell must be moved to its place, and perform its functions as an unit, and by its self-motility. Mechanic force is utterly out of the question. The organ is formed by each cell's individual action. No cell can act upon another. In the maneuver of a regiment of soldiers it is not an external force, as a wind or a battering ram, that moves all to their places. Each man is moved from within as a unit, dominated by the command of the colonel. Exactly so life dominates the nucleus of each separate cell. The harmonizing, ordering intellect lies behind the individual cells in the unity and mentality of Life.

A reaction from the doctrine of the individuality of cells has lately arisen, consisting in the attempt to conceive and prove the body to be not an aggregate of cells, but a single cell-mass. It was felt that the doctrine of cell-individuality was fatal to mechanicalism, because the body is a unit

dominated by a common interest that reduces individual cells to the complete servitude of design and unity. But this way of escape is closed by the developmental history of the "cell-mass," and by the inexpugnable fact that structure proceeds by the harmonization and subjection of separate cells, each acting independently from within its own nuclei. Cell-unity and independence, so far as other cells are concerned, is an incontrovertible fact. The unity sought in the conception of the organism as a single huge cell is a vain delusion: it can only be found in the reins of power and life reaching from each individual cell to the hidden hand of the Master-Driver, Life. The cell is servant of Purpose and Design. Imperfection, death, disease, sin, and wrong, are the products of imperfect mastery of the cell, of the insubordination of matter; but progress, and religion, and right, are the names for cheerful cell-subordination, for complete mastery by life, for the quickness of cell-response to the tides and will of the great ocean-master, thus seeking through innumerable bays, estuaries, canals, and mechanisms, to reach into the inaccessible lands of matter and flood them with its infinite fluid life. Upon the mechanic theory, life as a function of matter, etc., there is no explanation of the subordination of cells, their literal enslavement as units of structure. What possible mechanic force could make a billion cells shape themselves into a tube here, a strand there, a sieve-like wall, a contractile bundle, or a supporting structure?

The new-born cell, as we have seen, has all the powers in greater or less perfection, shown by any perfected or differentiated organ. It is only and simply by setting a cell to do a special and limited work that we have specialization of function and production of structure or organs. What mechanic force or self-created necessity would sort out and mold to particular use by specialization and hypertrophy one set of cells to become contractors,

another membranes, others as containers, supporters, transmitters, secreters, excreters, protectors, reproducers, and the thousand other diversified functions performed by our various tissues? The marvelously intimate and subtle nature of life's manner of working becomes truly awful when we realize that all this unity in diversity is reached by the purposive agency of one unseen mental power operating alone through the nuclei of these countless billions of individual cells. The work indeed is *never* mechanical, never by masses or *ab extra*, is unexceptionally nonmechanical, always through units, and *ab intra*. Neither must we forget that not one cell of all in our whole organism can, as an individual, have any self-satisfaction. It is evermore doing something for some purpose it knows not of, evermore acting for some other part. It points elsewhere for an explanation of its function, having in its own work no "final cause" as the theologians would say. It is again precisely so as regards each organ and set of organs. The digestive system is working for the circulatory system, this in turn for all the fixed and functional tissues, the bones to uphold the body, the muscles to move it, the nervous system to bind all parts into unity, etc., etc. No cell, or organ or tissue whatever can say that it exists even in the slightest degree for itself. Its excuse for being is a reference elsewhere. If logic be a science or logical inference a mental necessity, this means that the final cause lies beyond the body itself, *quâ* body, and in that region of unseen life which exists behind, in, and through all its objectifications.

The Parasitism of Animal Life and "the Knighting of Matter."—There seems to me to be something peculiarly significant in the robbery of the means of its existence by the animal from the vegetable world. There is in the first place hardly an order of lowly animal forms that does not get its food from the plant-world. The plant can form a living protoplasm from inorganic materials. This the

animal cannot do, and hence his universal appropriation of vegetable protoplasm, ruthless and continuous, for his own selfish needs. Beyond this kind of universal pillage the animal world, below man, does not go. But with the entrance of the human mind the wholesale system of robbery is extended a thousand fold. In the first place, he, as a meat-eater, adds to his own robbery of food directly from the vegetable world, by a tremendous slaughtering of inferior animal forms. These last by his purposive breeding and systematic care, are increased in numbers a thousand fold, and thus is organized and increased the great system of attack upon the plant-world and reckless appropriation of its labor and stored products. The flesh of animals is concentrated, potentialized vegetable protoplasm. In the second place, man, not content with food, descends with an almost savage fury upon the world of plant life for other means of self-gratification. Continents of forests are cut down to furnish him wood, and the stored-up forests of millions of past years are being exhausted for fuel; a large part of the cultivable land of the globe is used to give him clothing, either directly, as cotton, linen, etc., or indirectly, as wool, silk, etc. To enumerate the things wrenched by man from the vegetable world mediately or immediately, and from the original intent, would require a cyclopedia, and would indicate the physical bases of most of our civilization. The commerce of the world is the almost unique result of this "plan of campaign."

All this seems at first sight to be so inherently wrong and unjust that in view of the deep unity of all life, whether plant or animal, one wonders if the world of plant-life will submit forever. Is some long-stored revenge in waiting for mankind? Will not retribution overtake him for such a world-wide million-year-long organized system of reckless plunder? In the destruction of forests a retributive justice is manifest in the havoc and devastation of waterways and

valleys through which the unstored rainfall rushes to the ocean, leaving drouth and field-denudation as the aftermath. In the conflagration of cities man is punished for building with robbed wood instead of the more fitting inorganic materials he would have used had he not been so furiously greedy and hasty. The wars and bloodshed that make up the subject matter of history* are all conditioned upon the hell-driven determination to wrench some natural advantage of climate, some form of natural or acquired wealth—all, at last, vegetable wealth—from another robber-possessor. Slavery, and its modern form, industrialism, are examples of the same fact. Civilized wealth is masked slavery, the toilers being the direct robbers, the millionaires being simply the slave-drivers and captains of the bandits and caravans. Royalty, official and social position, "protective" and prohibitive tariffs, monopolies, trusts, *et hoc genus omne*, are schemes and labyrinthine deviltries whereby mankind subjects itself to men, and all go a hunting to loot the magazines of force created by grass and leaf—by the mysterious vegetable divinity, Chlorophyl. In the diseases of civilization there lurks an evident retributive justice. In prostitution, hysteria, drunkenness, vice, in insanity, blindness, deaf-mutism, trampism, in the crowd-diseases, in syphilis, in phthisis, etc., etc., the discerning eye runs back along the lines of motive and causation until the fundamental origin of all is found in the selfish greed, laziness, and desire to enjoy without work, that have caused men to prey upon the vegetable world, to congregate in cities, to demand and not give, to scorn while using the very sources of life. Lastly in the new knowledge of the role more and progressively played by microorganisms in

* "History, from one end to the other relates simply of wars. But the origin of all war is the desire to thief; hence Voltaire justly says, 'Dans toutes les guenes, il ne s'agit que de voler.' This furnishes the material for the world's history, and its heroic deeds."—*Schopenhauer*.

the development of disease and their influence upon civilized life we catch a truly awful glimpse of vegetable revenge. Because the bacterium, bacillus, micrococcus, and spirillum, the yeasts, molds and fungi, that in scores of families and types, and in billions of ever-present numbers hover about us, infesting the air, food, and water we drink, penetrating every organ of the body, the causes direct or indirect of most all deaths and mortal diseases—these microbes are little plants. The warning and retribution may be plainly seen in these facts; the punishment is the fitting and natural consequence of the sin. Because of the fact that all organic forms are incarnations of one unitary life-force, there should not be a perpetual war of one great order upon another. They who work lovingly in the fields and forests are given ungrudgingly the wealth of the vegetable world,—and they are free from the above-mentioned diseases, evils, vices, and punishments of the “civilized man.” The vegetable world says, “ask and ye shall receive”; she gives with a complement of love and health to those who live with her; to those that plunder and ravish, she sends her little warriors and allies, and lo! consumption* and zymotic diseases destroy her destroyers.†

* The bacillus tuberculosis only settles in lungs weakened or insufficiently developed; chest-expansion and exercise,—proper lung-development—is the certain prophylaxis of pulmonary tuberculosis.

† The plainly-marked tendency of modern bacteriologic and pathologic research is to prove that the microorganism of specific diseases is not primarily causative, nor even necessary to the disease. It seems to be certain that the cocci and bacilli would not have settled in the tissue had the tissue not been previously diseased. The tissue was unfit for healthy life and gave hostage to the little vegetable forms. The weakness of the victim invited the assault. The chemico-physical conditions of the organism were tending to the disorganization that the advent of the microorganism hastened. It is more and more plain that the microbe is a kind of a ferment, innocent enough were there not present substances in such unstable equilibrium that they were on the point of dissolution. The pathogenic microbe is the exploding fuse; the powder or dynamite must preexist.

This systematic plundering by humanity is founded upon a wonderful fact that I have ventured to call the **Knighting of Matter**. According to medieval custom when a man had once been made a knight he was by the ceremony raised out of the common mass of mankind, and not even by his own fault or will could he ever be again degraded to the common level. A glory or grace had become his forever. In the same, or in a far more real way, matter—crude chemic elements—are caught up by life and, once stamped with her seal, become ennobled with utility and significance never possessed by matter not so knighted. Not even the metals can become of any use to us without some metamorphosis by life. And except the metals there is nothing that makes the world enjoyable or useful unless it have been knighted by life. The veriest rag or bit of leather of the dust-heap is provocative of interest and rich with significance to the eye that loves life's ways and her faintest footprints, because the mind runs back through all metamorphoses and modifications to the living organism of which this was once a vital part and where it gained all the quality that makes it precious and useful to man. All our clothing, houses, furnishings, coal, foods and true valuables, are useful to us because life once molded her somacules and cells into structural forms and then endowed them with a power and plasticity and utility and beauty, of which they can never be divested. Life's intellect is displayed in their wondrous order and ingenuity, her powers in their durability, her goodness in their perfect serviceableness, her love in the bounteousness of the gift, her grace in the beauty and charm ever lingering about them.

The Significance of Structure or Organization.—There is, we have said, a class of pseudoscientists who aver that life and mentality are the products of organization. The sullenness and the conspiracy of silence with which these wisecracks receive the repetitive demonstrations

of there illogicality is both pitiable and amusing. In all the life-histories of every organic being that has lived on the earth there was never an exception to the rule that function precedes structure, and life antedates organization. It is forgotten that numerous classes of living animals are organless throughout their entire lives, and that these non-structural masses of living jelly show every one of the six great types of physiologic function. They possess 1. Contractibility; 2. Irritability or response to stimulus; 3. Respiration; 4. Assimilation, or anabolism; 5. Excretion or katabolism; 6. Reproduction. All physiologic powers and processes of the highest animal body are comprised under these terms, and in no way go beyond them. Nay, more—the simple protoplasmic cell or the most primitive individual living element also possesses these functions. If it were not so, where would the organ or animal body get these qualities? The organ and body are simply combinations of the cells. "*Nihil in molecule quid non prius in atoma.*" A multitude cannot exhibit qualities not possessed by the individuals. Evolution cannot produce what was not first involuted. Development cannot bring out what was not there to develop.* The sensitiveness of protoplasm is said to explain all. It certainly does when "sensitiveness" is "explained," and when protoplasm is "explained," and when a world of other unexplainable things are not slyly hidden under these terms,—just as the old-fash-

* Merely to call the consciousness "nascent" will not serve our turn. It is true that the word signifies not yet *quite* born, and so seems to form a sort of bridge between existence and nonentity. But that is a verbal quibble. The fact is that discontinuity comes in if a new nature comes in at all. The *quantity* of the latter is quite immaterial. The girl in "Midshipman Easy" could not excuse the illegitimacy of her child by saying "it was a very small one." And consciousness, however small, is an illegitimate birth in any philosophy that starts without it, and yet professes to explain all facts by continuous evolution. *If evolution is to work smoothly, consciousness in some shape must have been present at the very origin of things.*—Professor James.

ioned piano tuners swept all the discords of the key-board into one to-be-avoided octave. Instinct and the higher functions of nerve-structures are glibly explained as extensions of reflex action. But reflex action is itself a term for a multitude of mysteries; among which are the recipient end-organ, the mechanism for transforming external into neural force, the conducting nerve, the "reflecting" ganglion, or center, the re-conduction of the message, the transfer of the same to the muscle or receiving organ, the resultant activity of the last, etc. Every organ is formed before it is used, and many organs find no explanation until adult life shows their use. Wherever purpose, there is mind. What power could form an organ for use twenty years after, except a power that foresaw and foreknew the after-use? I have a profound reverence for Darwin, and heartily believe in Evolution, but the explanation of the modifications of organisms by so-called "natural selection" is already outgrown, thoroughly unscientific and inadequate.* An Indian pictograph represents the Great Spirit quite as well. It is a clumsy, crude device of materialism to avoid acknowledgment of an intelligent, seeing, and designing life-force within an organism, that not only created the organs but ever adapts them to each exigency and environmental change that arises. Life that precedes and creates the organs must be wiser and more expert than the instruments she creates. Organization cannot explain mentality, but mentality explains the organs as tools and helps. Such a tool is the brain, created by Life in the womb, with mechanisms and preadaptations that do not find their full functional fruition for many years. Was the superb ingenuity and power that thus in the dark and long in advance of need, made and located those million ganglia

* See e.g., Syme, on the *Modification of Organisms*, where some of the arguments against Natural Selection are clearly stated.

and nuclei, interlacing them with many million insulated commissural fibers, with astounding delicacy arranging, foreseeing, planning, fixing—so that when the infinitely varying stimulus should come from without there should be its correspondent receiving and answering mechanism, —was this power inferior in intellect and vision to the machine it had created?

Much is made by materialism of the dependence of mental phenomena upon corporeal conditions, the mental influence of disease and drugs, the loss or change of mental conditions by cerebral injury, etc., etc. The whole point is poorly taken, and beside the mark. The criticism may be freely admitted to carry so far as it goes, but it applies only to the expression of thought, not to its generation,—and moreover, to its expression by a certain mechanism. Organization is differentiation of function; just as in a highly differentiated society, if all the watchmakers were permanently sick or injured, there would be no watches made or repaired, so a disabled or diseased part of a nervous system must affect the working of the whole nervous system. But the work of the nervous system is not to “secrete thought” but is (in part) to express it in a certain way, and as the society can teach other members to become watchmakers, so new nervous systems can be created by Life, and in repair can teach other parts of cerebral substance to learn to do the work of an injured part.

Then what shall be said from the materialistic standpoint of this *vis medicatrix naturæ*? What a “stunning” fact it is! To repair the injury of the “organ of thought”—is that not proof of thought and ingenuity beyond and behind organization? The wisdom of the unconscious exceeds by infinity the wisdom of the conscious.

All great thought comes unbidden, seems to be an inspiration born out of a Sea of Mind in filling and upholding the wavelet of our finite mind. The great mind

of Life created the little mind of our consciousness—creating first the instrument of the nervous system as an aid to itself in its work. The brain may be the organ of speech and action, but of thought—No! Its utterance is comparable only to the babblings and lisplings of childhood, the not-understood mimicries of words that the parent taught and alone understands in full. Languages, literatures, and philosophies, are the child's attempts to learn the profound hieroglyphics of universal life, the little reachings out toward a conscious understanding of the mighty thought of the silent and invisible Lord, who, before he created, understood the mechanism of our little understandings.

Imperfect Incarnation.—Evidences of Life's inability to adequately subjugate matter are everywhere manifest. The will and desire are clearly patent but the inability is also pathetically certain. Everywhere there is the heroic struggle against the intractableness of the instrument. Perhaps the most obvious example consists in the fact that the material, the inorganic tools, serve only a temporary use. As the old material is used, it loses its usefulness, and new supplies have to be grasped. Life catches up billions of force-containing molecules, extracts their energy and again throws them aside. The chemic elements of our body are being changed every instant, new supplies being brought in as ceaselessly. A great stream of materials is thus passing through the organism. It is said five-million red-blood corpuscles die with every breath we take. The organism persists unchanged because it has a changeless substratum of immateriality to confer continuity upon it. But material forms having no permanency are in continual flux. They will not be held beyond a passing second. Hence the tremendous expenditure that hunger entails—hunger, the evidence of matter's fearful fickleness, and its satisfaction, the evidence of Life's wonderful energy. In

the whole organic world this imperious necessity must absorb nine-tenths of the attention and energy of life. Like some terrible Louis the Fourteenth, matter will compound with life only on the condition of demanding some 80 or 90 per cent. of the total income.

Secondly, consider what death means and how Life conquers or evades it. Death is plainly but another sacrifice to the insatiable and mutinous servant. In youth Life has the material "well in hand," but soon the jealousy of matter grows and demands all. The bones grow brittle, the muscles stiffen, weaken, wither; the brain and nervous tissues hold out best, Life having a more direct and firmer grasp upon them, but even they become easily tired. Finally, though usually happening if no disease arise, or special organ be attacked, life seems literally choked or squeezed out of its home and death is conqueror. But Life has been cunning and active long before this: with the shrewdest foresight and ingenuity the dread event has been forefended. Far in advance, by the most intricate and strange mechanism, Life has gathered to a focus a representative bit of her best and most perfect physical material, and uniting it to another bit of similar material elsewhere contributed, to give it vigor, care, nourishment, time for growth, etc., etc.,—the whole wonderful production of sex and all thereto appertaining being one of the prerequisites—she soon has ready a new being, new in appearance but yet a transfiguration and perpetuation of the old—and Death is thwarted! Avaricious matter takes the old body, there is a better already assumed. *Le roi est mort, vive le roi!* But the note of victory and the charm of ever-renewed youth must not blind us to the fact of the tremendous expensiveness of the process, and that at last it is all a makeshift, an escape from a fatal calamity by superhuman exertion and ingenuity. It is a hairbreadth escape, effected with shameful loss of dignity and even downright

trickiness. One of the steps of the device is such a paltry, and filthy evidence of desperation that no better proof of Life's finiteness is needed. It is at once the world's joke and the world's tragedy, and must ever so remain. Each of us is Sancho and the Don rolled in one; we can only jeer at ourselves while weeping with self-pity, and in this mood we know not whether to offer Life our admiration or commiseration. Sympathy for the hero in distress is embittered by the plight he has put us in.

Yet another evidence of the power of the servant over the master is a set of facts that always delights the hearts of the gentlemen who continuously repeat, "This will never do!" Nothing pleases a class of God's critics better than a supposed proof of his incompetence or blundering.* They gloat over the persistent reproduction of semi-atrophied, disused, or functionless organs, the supposed poverty of power or device, the stupidly-continued creation of the useless. The pleasure which these folks have betrays the animus too plainly:—"The developmental history of the kidneys" is much made of, and "the process of converting an hermaphrodite worm into a warm-blooded animal." "The six obsolete canals belonging to the alimentary canal alone;" "the argument for design utterly put out of the court by the awkwardness of the whole plan," "the blind effort of nature,"—sentences like these make one wonder where the critic got his power of criticism. He talks as if he were not himself *ex hypothesi* a product of the "awkwardness" "undesign," and "blind effort." Can the stream rise higher than the source? whence the power of a mechanic evolutionary product to criticise and scorn the evolutionary process? The impertinence of fools is amusing when it is not disgusting. There can be no doubt of

* One of the most unblushing of these upstart impertinents is, strange to say, a woman. So far have we come! *Corruptio optima pessima.*

the fact that matter has inherent necessities and laws, and that Life has to adapt herself to them and use or evade them as best she can. It is said that there is a disease of the human prostate in which there occurs the secretion of chalk-like substances—the late resurrection of an interrupted habit and a far-away memory of egg-shell days! But in health there is no pathologic recurrence to the habits of a million years ago, and the fact as a whole, seems to me to be greatly to life's credit. When she has control, that is, can keep health, she can, as it were, keep down the old habit that seeks to arise. It is likewise to her honor that there are not more thymus glands, atavisms, functionless muscles, and survived relics of other times. Life has much to do to create new organs in response to new needs, to forefend new dangers, to look after her many, many children—a tirelessly busy mother!—Mayn't we excuse an occasional slip or doze? Don't we love her all the more, all the more vitally and really, that she is *not* omniscient and omnipotent?

The preservation of the delicate changelessness of the body-temperature, of which we have spoken, is another task imposed by matter, that keeps Life sleeplessly watching and alert. In fact, the history of Evolution is but an enumeration of the difficulties Life has always been encountering in the work of incarnation. In thinking how terrible these have been we can but feel gratitude welling in our hearts when we see victorious Life crowning success with vital abundance, when play and laughter override tragedy and tears, and when beauty tops utility.*

* * * * a force sublime which moves to good,
Only its laws endure.

“ This, is its touch upon the blossomed rose,
The fashion of its hand shaped lotus-leaves;
In dark soil and silence of the seeds,
The robe of spring it weaves.

Individuality and Personal Identity.—It may be asked, in view of the indwelling of a common life and its action only through cell-nuclei, if this fact does not render doubtful and finally destroy any belief in that hypothetically indestructible peculiarity of character we call Personality or Identity, and in its unlimited continuance. Happily there can be but one answer. The insane love of self, the hypertrophy of individuality which characterized the Romans, and is now again attaining a furious exaggeration, is to be looked upon as a sad accident of the struggle for existence. The whole fact is once again a corollary of the difficulty Life has had to get and to keep its foothold in matter. To

“ That, is its painting on the glorious clouds,
And these its emeralds on the peacock's train;
It hath its stations in the stars; its slaves
In lightning, wind and rain.

“ Out of the dark it wrought the heart of man,
Out of dull shells the pheasant's penciled neck;
Ever at toil it brings to loveliness
All ancient wrath and wreck.

“ The gray eggs in the golden sun-bird's nest
Its treasures are, the bee's six-sided cell
Its honey-pot; the ant wots of its ways,
The white dove knows them well.

“ It spreadeth forth for flight the eagle's wings
What time she beareth home her prey; it sends
The she-wolf to her cubs; for unloved things
It findeth food and friends.

“ It is not marred nor stayed in any use;
All liketh it; the sweet, white milk it brings
To mother's breasts; it bringeth the white drops too,
Wherewith the young snake stings.

“ This is its work upon the things ye see;
The unseen things are more; men's hearts and minds,
The thoughts of people and their ways and wills,
Those, too, the great law binds.”

preserve her forms against destructive tendencies and dangers, to give each individual animal such vantage-ground as would insure the preservation of self and the propagation of offspring, and so of her own incarnation in matter, Life has had so to exaggerate the disease of individuality, so to overfill each organism with the instinct of self-preservation and ruthless appropriation of others' rights, that we have the cosmically-wide facts of parasitism, the carnivora-outfit of instincts and implements, Louis Fourteenth's, modern millionaires, and the pathology of civilization. One of these most curious of morbid products consists of the fact of founding religions, with their systems of rewards and punishments, upon this instinct of self-preservation. The hunger for an everlasting continuance of existence, of a partial, narrow, undeveloped peculiarity of type—personal identity or immortality—will some time come to be looked upon as a strange atavistic hypertrophy and perversion of a passing phase of Evolution. Our true welfare consists, of course, in becoming unindividual, impersonal, in sloughing off the accidents of development, in eating our way out of the pupa-stage of individual personality into the psychic life of the universal personality. A rigid analysis of the origin and qualities of the peculiarities we name identity or individuality, shows that they are due solely to the accidents of Life-incarnation. Individuality—the pathologic variety of carnivora—is a disagreeable consequence of a great difficulty, the outcome of the stringent conditions matter places upon Life. Corporeal beauty illustrates the same law. A beautiful face is one free from marring imperfections, and vividly expressive of life. "Homeliness" results from individuality of feature, imbalance and insubordination of parts, incoordinations and imperfections of incarnation. Character and personality become beautiful only in so far as they approach perfection—that is, in so far as they are unindividual. Individuality consists in selfish-

ness, peculiarity, and imperfections. The more one is greedy for personal immortality the less he merits it, the less he has worthy of eternal perpetuation. Great minds and good hearts are not worried about their personal identity and after-death continuance. They know they cannot help continuing—not however as singing automatons or bundles of imperfections and desires, but as the common life that lives outside the laws of time and space. Love of individuality is love of self, and of separateness from the source of all life. The truest religion seeks freedom from self and union with the overstanding life. One must lose his life to find it. The common belief in immortality is the voice of the impudence and control of matter. It is the machine asserting superiority over the mechanic and the engineer. The only permanency and enduring unity of an animal organism consists in the life or logos-will that made and upholds it, not in the stream of matter ever flying through it. Individuality inheres in and is begotten of organization; when organization ends individuality ends, though the life that created organization by no means ends.

The Basis of Ethics and Religion consists simply in this fact that I have been illustrating, the fact of Life's purposes and will struggling against the difficulties of incarnation. Right conduct consists in adopting Life's plans as our own, and working with and for her. Most of the sin and wrong and suffering come from the obstinacy, the over-control of matter, the imperfect incarnation of Life, and the sacrifices she has to make to succeed at all. If we aid her we are good; if we side with matter we sin. The principle cleaves straight through all doubtful questions of casuistry and conduct, and offers a touchstone of infallible certainty and clearness. Every ethical rule or the judgment of any specific act brought to this tribunal is settled with swift accuracy. It decides peremptorily, smashing many a fond and cherished conventionalism and

legalized injustice, elevating to honor many quiet and ignored sources and principles of right. A thousand illustrations that must be passed by here, at once flash before the eyes. The principle holds as true and unfailing in questions of religion. No love was possible to a supposed omniscient and omnipotent deity; but with the struggling Life of our life we can feel a kinship and sympathy. If our adoption of Life's will as our own be vivified by fervent love, the fulness of religion is ours, and we are in veriest fact the Sons of God. Sonship, of course, presupposes the brotherhood of all men—nay more, of all organic forms. The absorbing interest of the civilized world in evolution and biologic study is but a forerunner of the great recognition and atonement that must follow. We are beginning to hear the whispering that is by and by to become an ever-sounding voice, the faint, long-ignored calling, swelling to command, of the Father of Life and of forgotten brothers—*Tat twam asi!*—This art Thou!

Pessimism and Optimism.—The acknowledgment of the spirituality and fatherhood of life has been stifled by the unscientific inference that any such admission carried with it the sweeping belief in the omnipotence and omniscience of God. It has been keenly felt that the very brutal fact that "the creation groaneth and travaileth in pain" was not to be blinked and not to be reconciled with the belief in an omnipotent deity. As the old antithesis put it, either God doesn't wish to stop evil and pain, or He can't." In either case He is not God. There is absolutely no escape from that logic. Hence men preferred to believe in the nonspirituality of life rather than, accepting it, to be forced also to accept the absurd dogma of the omnipotent goodness of the father of life. Thus was born the modern doctrine of materialism; thus sane, educated men, closing their eyelids that they may not see, pretend to believe that "life is a function of matter," etc. Many now

suppose it is the tradition of Science, and that to be a "scientific" man is to be a materialist. Many a dupe of this kind has, like Hannibal, bound himself by an oath before its import could be understood, and goes blindly forward, bravely devoting fine powers of mind to a hopeless and doomful task. To them the Cato of a truer philosophy must ever thunder in their ears the fateful fiat of a greater Rome, *Delenda Carthago!* The whole position is the simple result of what the logicians call a *non sequitur*. The belief in the spirituality of life does not at all necessitate any belief in its omniscience, its omnipotence, or even in its absolute goodness. Even the most pious of men have been forced to disbelieve in the omniscience—a palpably absurd dogma. To this may be willingly added the admission that boundless goodness and omniscience do not exactly *sautent aux yeux*, when we contemplate the history of past men and animals. Had Life been altogether beneficent, poison-bags, tusks, bloodshed, and the degrading bestiality of the struggle for existence, would not have been so conspicuous and characteristic features of past and present life as is evident. Even had Life been omniscient without omnipotence or goodness, it would seem that her ingenuity might have avoided much of these as wasteful and useless.

Thus the acknowledgment of the independence and immateriality of life argues nothing as to the goodness or non-goodness of that life. Neither the Christian nor any religious faith gains a jot or tittle thereby. The question of optimism or pessimism yet remains. Rome may have been worse than Carthage, but Rome was the conquering fact. The final question at issue between Schopenhauer and Hegel is in no wise touched. But the question between Plato and Büchner is eternally settled. Hegel's optimism may be wrong, but the immaterial *λογός* certainly exists, and we are its creations and mouthpieces. Scho-

penhauer's pessimism may be unjustified, but *der Wille* is the heart and soul of us. It might be better if materialism were true, but it is not true. Science seeks to know what is, not what ought to be. No profound mind would deny the facts that pitying Buddha and pitiless Schopenhauer have laid bare. The awful steel of Fate and suffering has sunk deeply into our hearts and no divine Surgeon comes to extract it. The divinest Surgeon that ever lived, in uttering the saddest words ever spoken, acknowledged the poisoned iron in his own breast. *Eli, Eli, lamma sabachthani*. Like this great Healer, and his elder brother Buddha, the pain must not cloud our intellect and turn it into a juggling instrument of revengeful untruthfulness.

Following the light of reason, we may catch a gleam of consolation. Perhaps there *will yet be* a perfect divine physician. The certainty of a common, universal, self-existent, and supernatural life, functional as the heart and essence of all organic beings, makes us secure in the preservation of our true self. Individuality and personal identity—undesirable accidents of our organization and materiality—we are happily not doomed to inherit, but a progressive immortality of soul seems more certain than the fleeting mortality of sense, that for a day and as a child's toy has pleased and deluded us.

IS MEDICINE A SCIENCE?*

The reproach that medicine has not kept step with the general scientific progress of the age, is one so commonly made that it has doubtless often been accepted as a truism by many who in other matters exercise a more discriminating judgment. On the part of those who know the facts, there is, of course, not the slightest question that medicine is scientific in the best and highest meaning of the word. How the query arises is easily explained when one considers the erroneousness of the common conception of the term science, the failure to provide the means of proper physiologic knowledge in our plans of primary education, the deplorable condition of medical education, and, lastly, the ignorance of what modern scientific medicine has done and is doing.

The last point seems the most important, and in considering it one must not forget that so fast as a more or less clearly-circumscribed department of medicine has grown precise and scientific, it has as a specialty taken a position of semiindependence. The world thinks only of the remaining undifferentiated part, called general or internal medicine, as being distinctly medical; and forgets that the specialties, which have almost reached the limit of possible scientific extension and accuracy, are very essential parts of medicine, themselves the samples and pledges of coming progress in all. Thus in surgery, ophthalmology, obstetrics, dentistry, otology, dermatology, etc., there is on the

* From *The Forum* of Dec., 1889.

part of competent physicians no considerable difference as to diagnosis and treatment in a given case ; and the reduction of the mortality from diseases belonging to these departments is proof of that systematization and accuracy which we call scientific.

It is well known that the application of bacteriologic study to surgery, obstetrics, etc., has in important respects revolutionized them. Surgical, hospital, and puerperal fevers are now almost things of the past. Twenty years ago it was not uncommon for the mortality of puerperal septicemia to mount as high as 30, and even 50 per cent. It is to-day less than one per cent. The same explanation is to be given as regards the successfulness of the modern Cesarean section. The science of pelvimetry has also saved the lives of many children and mothers. Ophthalmology is perhaps the most exact of the medical sciences, and even if no prophylaxis of cataract be ever found, the restoration of vision in 95 per cent. of cataract operations is a decisive proof of excellent work. But perhaps a still greater beneficence is to come from stifling the most fertile source of reflex neuroses—the headaches, dyspepsias, choreas, etc., so often due to “eye-strain.”

If one thoroughly conversant with the medical progress of the last few years, take up even the best work on pathology or general medicine issued five or ten years ago, he is astonished to find how much seems old and outgrown. The stupendous discoveries and advances made from day to day, cause the book before the last to seem like history rather than present-day conclusions. Any attempt even at the briefest resume of these wonderful labors, even if it did not presuppose an encyclopedic erudition, would, in the space allowed me, be impossible. To the general reader, moreover, it would be very dry reading. There are but few “choice souls” who find a book-catalogue interesting reading, though every line may suggest the enthusiasms and

labors of years, and, in a way, be fraught with profound import. All, therefore, that can be done, is to glance at a few of the most salient points and aspects of modern scientific medicine, which may serve as illustrations of that spirit of science and progress which is working in and through it all.

No other discovery has aroused so great hopes, and none has so superbly satisfied many of them, as that of the existence and disease-producing influence of the minute organisms called bacteria, microbes, or microorganisms. Their pathogenic influence is now established beyond controversy, and to this discovery is due the revolutionizing of surgery, the extinction of surgical and puerperal fever, etc. Indeed, every department of medicine has been electrified by the partial success and perfect promise that it holds out. I had prepared a table of the different orders of these "disease-germs" that have been studied, showing their methods of "cultivation," habitat, nature, peculiarities, and pathogenic influences, but it is too extended to transcribe here. A glimpse may be gained of the hordes of invisible enemies that may live upon or within us, from the mere numbers of the principal species. From the latest data that I can find, my summary shows 76 distinct species of bacillus, 50 of micrococcus, 20 of spirillum, 8 of sarcina, 6 of beggiatoa, and one each of leuconostoc, astococcus, leptothrix, cladothrix, and crenothrix—165 in all. Of this number—especially frightful if we consider their tremendous power of multiplication—some are almost certainly harmless, while yet another portion is doubtfully pathogenic. But some 43 varieties of micrococcus, 30 of bacillus, 4 of spirillum, and one of leptothrix are certainly connected directly or indirectly with human diseases. Among the principal of these are the pyogenic or pus-forming bacteria, with which the surgeon has chiefly to do, numbering 8 principal varieties. Other orders of micrococcus believed to

be associated with disease, are the micrococcus of erysipelas, Aleppo boil, pneumonia, mammitis, diphtheria, scarlatina, smallpox, measles, yellow fever, gonorrhea, and possibly of hydrophobia. Among the pathogenic bacilli, the more noteworthy are those of anthrax, tuberculosis, green diarrhea of children, diphtheria, epidemic dysentery, leprosy, glanders, and typhoid. The spirillum of cholera (or comma bacillus) is the most important of the spirilla. I have attempted no enumeration of the diseases that perhaps over-enthusiastic discoverers believe due to microorganisms. Even such unlikely types as cancer and tetanus are confidently claimed. There is, of course, much indefiniteness, even doubt, as to the etiologic role they play. The study is attended by extraordinary difficulties, and is liable to induce confusion. *Post hoc* is doubtless frequently mistaken for *propter hoc*, and much extravagance of claim must be set over against the dead weight of an extreme conservatism.

The investigation of the laws of these microbes gives entrancing, though also tantalizing, glimpses into many mysteries. One such is the theory of malarial or intermittent fevers, to be described later. The immunity given by one attack of an infectious disease, is explained as due to the appearance, during the first attack, of certain products that render the tissues and cells more hardy and resistant to subsequent attacks—we explain everything nowadays by habit, or organic memory. This fact, coupled with its complement, the attenuation of a virus, or modification of its virulence, by passing through the system of another animal, serves to make clear how, for example, one attack of smallpox usually gives immunity from a second, and how the attenuated virus, or cow pox, does the same. Either calls out the resistance of the cells that have learned skill in one encounter, and know their enemy by experience. In a certain sense, the invasion of the organism by bacteria

is a sort of intimate traumatism or inner violence, whose injury the inherent powers of the organism must resist or heal. The bacterial origin of the infectious diseases reduces at a stroke the catalogue of true idiopathic, autogenetic, or self-produced diseases, and our conception of the dignity and heroism of the organism at once rises. Its warfare against innumerable invisible foes commands our sympathetic respect. It would seem that all the body's foes come from without. If such a disease as cancer be of bacterial origin, it is probable that any other disease may be, and the dream of an elixir of life would be realized if we could keep all microbes outside and observe the laws of hygiene.

The infective diseases are the principal disease-causers and death-producers of the world, and all are quite certainly bound up with the transfer of specific bacteria or poisons from one organism to another. The profound, almost sole, lesson of prophylaxis and preventive medicine, is the avoidance of contamination. Phthisis, the most fatal of all diseases, causing one death out of every eight, is now proved to be contagious. Its inception depends upon the passage of the living bacillus from one organism to another. When this is prevented the dread affection will no longer mow down its millions. Its prevention seems easy, and by two feasible simple means: the devitalization of the sputum of consumptive patients, as the desiccated tubercle bacillus still maintains its vitality; and the legal control and inspection of all dairies and of the slaughtering of animals, so that tuberculous meat or milk shall not be sold. There is now no doubt that bovine and human phthisis is the same disease, due to the same microorganism; and that the transfer of the latter to man, by the ingestion of tuberculous meat and milk, is a common cause of human phthisis. Dr. Behrens regards the exceptional freedom of the Jewish people from phthisis, and its low

mortality, as due to religious rules concerning the choice and killing of cattle and the sale of meat.

Up to the present time, it must be confessed that bacteriologic studies have not brought out therapeutic measures to equal the etiologic importance ascribed to the microorganism. To the patient attacked with infectious disease, the thing of all importance is not prevention, but cure. The enemy is entrenched. The great aim now is to find some agent that will reach and kill the bacterium without killing the organ or tissue in which it is secreted. Many indications, and indeed many successes, foreshow that we are upon the eve of brilliant victories, in this respect, and the avid ingenuity of a thousand delvers is at work upon the problem. What honor too great for the discoverer of such an agent? All may end in disappointment, and the world be thrown back upon prevention alone. But if this be effective, it is, of course, all that is desired. To annihilate the ultimate causes that produce disease, or to inhibit their action, is better than numberless cures to-day, that must be repeated to-morrow.

Another new field of research that is at present most industriously worked, is that of the substances called ptomains and leukomains, the first being chemic, alkaloidal substances, formed by or during the putrefaction of nitrogenous organic materials; the second, similar products formed within the living body by tissue-metamorphosis or bacterial agency. There have been isolated and studied some 40 or more ptomains and unnamed bases, of which about 25 have toxic or injurious effects; and 16 leukomains and unnamed bases. The nature and actions of the latter remain largely hidden, owing to the evident fact that their isolation is rendered almost impossible.

The unity of all true science is illustrated by the fact that these substances, at first seemingly disconnected from bacteriologic study and relationship, are now seen to be

most intimately bound up with bacterial life and action. It is half-proved that the bacterium does its mischief, or much of it, by the direct or indirect production of these alkaloidal poisons. The method, and even the fact, is not sufficiently definite to admit of a very clear exposition. The influence of these products upon the tissues, together with the reaction—the habitual or acquired resistance of the tissues to the same—constitutes the immunity of which I have spoken, acquired by the first attack of a contagious disease, or by the inoculation of attenuated virus. A most promising outlook is also found in the discovery that immunity is gained in some diseases, and perhaps in many, by the inoculation of purely chemical, or artificial synthetic, substances. The thought, like so many, is brilliant with possibilities that make us wish to see what the next few years may bring forth. A beautiful illustration of the possible method of action and reaction between the bacterium and leukomains, is the theory of malarial and intermittent fevers—a theory, indeed, that rests upon a pretty firm basis of probability and justifiable inference. It is well known that bacteria in culture media often develop some substance that stops their growth, and that they die, as it were, in their own poison. It is supposed that the malarial micro-organism does the same in the blood, and that the remission, or intermission, stage of the disease corresponds to the period when the circulating bacteria have been drowned or paralyzed by their self-produced poison. The stage of the return of the fever is synchronous with the revivification of the microbes, or with a fresh invasion of new armies from the spleen and lymphatics.

Thus, again and again are we brought back to the conclusion that in aim and in fact medicine is becoming preventive. Every discovery, even in therapeutics, seems to bear in its hand the motto, Prophylaxis is the best cure. It is not that great and invaluable discoveries of healing

agents are not constantly being made. The nobler aim and the manifest destiny of a far-sighted prevention become necessarily dominant ideals. The brilliant results of vaccination are illustration and proof. Of all pitiable bigots the antivaccinationists are assuredly the finest specimens. In England, in the seventeenth and eighteenth centuries, the smallpox mortality was from 4,000 to 5,000 per million deaths. In 1887 it was nine! The decline in the death-rate during the gradual extension of vaccination, whilst marked for all ages combined, has been almost exclusively among children. Since 1847, in children below five, it has fallen 80 per cent. The immunity conferred is, therefore, in the earlier, and hence most valuable, period. Taking the mortality at all ages, the death-rate from smallpox has fallen 49 per cent., while that from other causes has fallen seven per cent. In the London Smallpox Hospital, in the past twenty-five years, out of 6,000 cases occurring after vaccination, Mr. Marson finds that the percentage of those stated to have been vaccinated, but having no cicatrix, was $21\frac{3}{4}$; with one vaccine cicatrix, $7\frac{1}{2}$; with two, $4\frac{1}{8}$; with three, $1\frac{3}{4}$; with four or more, $\frac{3}{4}$. For comparison, the deaths of the unvaccinated were $35\frac{1}{2}$ per cent. Of 10,403 cases of smallpox treated in the metropolitan hospitals, the deaths of the "vaccinated, with good marks," were 3 per cent.; of the "vaccinated, with imperfect marks," 9 per cent.; of the "vaccinated, but with no evidence of the same," 27 per cent.; of the "unvaccinated," 43 per cent. In the face of such facts, even cranks and fools should learn, or be most summarily taught, the lesson of silence.

In the same, though possibly in a less striking, way, there has been a noteworthy advance "all along the line," so that there is now no subject of medical study that does not bear witness to the spirit of accurate and exhaustive research that characterizes our age. New drugs and thera-

peutic agents are sought with eagerness—and found where they would least be expected. The very refuse of coal-oil refineries is wonderfully enriching our *materia medica*. Every substance, whether organic or inorganic, that may possibly influence the animal economy for good or ill, has been repeatedly tested by manifold timed and guarded experiments upon animals, and finally upon the human being, until its powers are determined with the precision required in the case of a new explosive, or the torsion balance. Occasionally there is a sadly ludicrous side to this feverish eagerness, and duped over-confidence finds itself landed in the quagmire of an elixir dream. But the trained intelligence and massive strength of the great body of the profession smiles at such sorry delusions, and calmly pushes forward to predestined victory.

Simply to enumerate the larger incidents of the advance would require a volume, not a page. The finally convincing proof is the work done. By its fruits must any work be judged. Let us, finally, glance at statistics. Nothing is definitely known unless one method of the knowledge be numerical. "The 'sometimes' of the cautious is the 'often' of the sanguine, the 'always' of the empiric, and the 'never' of the skeptic; but the numbers 1, 10, 100, 10,000, have only one meaning for all mankind." In 1861–70 the English death-rate from the seven chief zymotic diseases—smallpox, measles, scarlet fever, diphtheria, whooping cough, fever (typhus, typhoid, continued, etc.), and diarrheal diseases—was 4.248 per 1000 living. In 1887 it was 2.385—very little more than one half! Whether a science or not, it is plain that medicine has, in this aspect, and in England alone, saved over 67,000 lives. A remarkable instance is the class called fevers, the number of deaths from which in twenty-five years has been reduced from about 20,000 a year to 5,873.

Despite the general carelessness caused by the prevalent

belief in the noncontagiousness of phthisis and by the use of tuberculous milk and meat, in England from 1850 to 1880 there has been a reduction in the number of deaths from this dread disease amounting to 327 per million. But the death-rate for other respiratory diseases has remained the same—a fact that is in truth a cause for congratulation, when it is remembered that the urbanization of all England that has gone on during this period, together with the unhealthy commercial and manufacturing slavery of the masses, would doubtless have doubled the mortality, had not Medicine and her handmaid, Sanitation, been everywhere heroically at work to forefend and to save. In the same way is to be explained the increase in the death-rate for diabetes, chronic renal affections, and nervous diseases, due to the intensity of the mental strain and worry of modern commercial and fashionable life. That the death-rate has not been trebled, is to the credit of scientific medicine.

The decline of the entire English death-rate summarizes the whole matter for us. Within one hundred years that of all Europe has fallen from 34 per 1000 living to about 20, and that of England to 18.5.* The death-rate of the English army has been reduced by more than one-half within the century. In the strict census-taking period, the mortality of English males has been reduced 2.88 per cent., and of females, 7.62 per cent. This adds about one and one-half years to the average life of males and three to that of females. Or, according to Dr. Ogle, a million males will live 1,439,139 additional years, and a million females, 2,777,584 years. Each year, there is thus placed to the credit of each average million of the new-born a life surplus of about two million years. Has the community, then, no debt of gratitude to the medical profession?

* The death-rate of Brooklyn and New York, which should be far lower than that of London, is far higher. If it were only equal, there would be an annual saving of 16,000 lives, and 32,000 years of sickness.

If we take the debit and credit of each disease, we get the following table:—

ANNUAL DEATHS PER MILLION LIVING IN TWO DECENNIA.

CAUSE OF DEATH.	1861-70.	1871-80.	ANNUAL INCREASE OR DECREASE IN 1871-80.
Smallpox,	163	236	+ 73
Measles,	440	378	— 62
Scarlet fever,	972	716	—256
Diphtheria,	185	121	— 64
Whooping cough,	527	512	— 15
Fever,	885	484	—401
Diarrheal diseases,	1,076	935	—141
Cancer,	387	473	+ 86
Phthisis,	2,475	2,116	—359
Hydrocephalus,	347	317	— 30
Other tubercular diseases,	437	445	+ 8
Diseases of the nervous system, .	2,785	2,770	— 15
“ “ circulatory system and dropsy, . . .	1,349	1,477	+128
“ “ respiratory system, . . .	3,364	3,760	+396
“ “ digestive system, . . .	981	978	— 3
“ “ urinary system, . . .	298	392	+ 94
Puerperal fever, childbirth, . . .	165	167	+ 2
Violence,	765	733	— 32
All other and unstated causes, . .	4,815	4,262	—553
All causes,	22,416	21,272	
Balance of decrease, . . . . .	. . .	. . .	1,144

The figures are not to be had for the past ten years, in which a marvelous and continuous decline in the death-rate is still in progress. If we estimate that 1,500 lives per million are being saved the English people by medical science and sanitary legislation, we get a grand total of saved lives of over 50,000 a year, and therefore find this single people richer in twenty years by more than a million people. As nowadays we estimate everything in terms of money, we may apply that method to life itself; and taking Dr. Farr's low estimate of the worth of an English life, the mean net value of the phenomenon called an agricultural laborer (\$750), we should by this “buyer's appraisalment” have a saving of something less than a thousand

millions of dollars. But what valuation could be made of the lives of such men as Bessemer and Darwin, supposing them not among the saved? English statistics have been made the basis of illustration, but scientific medicine has penetrated into all civilized countries—among six hundred millions of people. Supposing that the saving of life and sickness in other countries has been but one-half that in England, we have yet to multiply all our figures by ten.

But the account is not yet closed. Dr. Farr estimates that for every annual death, two persons are on an average suffering continuously from sickness. At the lowest rating there are two years of severe illness to every death. If therefore, according to the previous calculation, 1,500 English lives are saved each year, 3,000 years of sickness are also annually saved. Even this tremendous saving may be multiplied many times by including the numberless and unknown, but certainly existing, cases where disease is aborted, cured, or prevented by the skill that gives back to the healthy class persons who without treatment might not have died, but who would have permanently passed into the class of those maimed, crippled, or weakened by chronic or partially-overcome disease. In such regions as these, money considerations are as much out of place as to talk of buying a sunset; and though it might be frankly admitted that as a business the medical profession would be pleased to take as a compensation ten per cent. of what it saves society, it assuredly infinitely prefers intelligent cooperation and esteem. That profession alone at the present time offers the spectacle of a large, compact, self-conscious body of men, driven by no bigotry or zealotry or tempestuous Zeitgeist, working with eagerness, determination, and almost the assurance of success, toward its own undoing—toward the annihilation of its means of subsistence, and its very existence. It may be that disease will never be eliminated from human life; but none are prouder than medical men of their partial success in this;

none more elated over the prospect that now seems almost assured, of striking a final death-blow at the root of all contagious diseases, or those which cause the vast majority of all death and sickness. In this highest of all human offices they ask only sympathetic help. They, too, are certainly bearing their share of the present burden of the world's unfortunate and overloaded. It is hardly an exaggeration to say that for a full half of its present daily service, it not only asks no pay, but is glad and proud of its spontaneous charity. Every physician treats the poor free of charge, and in nearly every square of all our cities dispensaries and hospitals are found where the best and highest medical service is at the disposal of all without charge. Medicine is thus not only a science but it is an art; not only an art but a moral system and almost a religion. Is there, has there ever been, another such unselfish work done outside the religious faiths? Take the law for comparison, and, except in rare and exceptional cases, can a poor factory girl or workman get from analogous legal institutions talent for his defense, and, by its aid, justice before the law, without first laying down a handsome retainer? Even with the most just of causes, unless the money at stake be immense in amount, is it not wiser to allow injustice to rule, than to seek redress in a modern court of equity? What is the appreciation shown the science of medicine? One instance only need be given as an answer. In the so-called medical center of the United States, \$20,000,000 is spent to construct a palace, rich with marbles and carvings, largely for the use and behoof of ward politicians; but never a thousandth part of such an amount to endow an institution of medical education, sanitary research, or preventive medicine—things certain to repay, even in dollar-values, a thousand-fold, and in health progress and beneficence, incalculable blessings throughout coming time!

THE DUTY OF THE COMMUNITY TO MEDICAL SCIENCE.*

I cannot say that I have had any personal experience as regards the difficulty, but it is stated that an intelligent and duteous rich man, by reason of his mental vision and conscientiousness, finds no problem so hard of solution as that of disposing of his wealth without doing injury to the individual legatee or to the general community. There are but few "charities" so carefully and judiciously established that a cold intelligence does not find them productive of as much harm as good, and there are many that are fountains of almost unadulterated evil. The most grievous crimes of many "good" men are frequently their wills—those very documents in which the devisors seek to make some atonement for the sins of wealth-gathering by the unconscious sin of wealth-scattering. There should be a book of instruction written on this subject, setting forth the science of endowing without damning. Millionaires are such common, every-day folk that they should be instructed and trained in that excellent art, so little taught, so little practised—the art how *not* to make an ass of one's self. I have read somewhere of a spinster of advanced years, bearing a secret grudge against the government for taxing her, triumphantly considering that on her death-bed she had "got even" with the United States treasury by burning her whole fortune of government bonds. Many bequests

* A paper read before the American Academy of Medicine at its meeting in Milwaukee, June 3, 1893. From the Bulletin of the American Academy of Medicine, No. 16

are quite as wise and still more harmful. There is a strange fatality, a subtle waywardness in institutions, whereby they insensibly drift away from the plan of founders, and in a few years are seen to be increasing the very evil they were meant to check. There is in this an historic sarcasm, a divine irony that tells the impertinent philanthropist that it is of no use to give unless he gives wisely. In charity, sentiment alone is not to be trusted. It is only intellect that transforms benevolence into beneficence. And this is simply because benevolence seeks only alleviation and the annulling of effects, whilst it is only the intellect that tells how to stop causes, and thus end the entire generation of effects.

The object of this writing is to encourage medical men by every means in their power to spread abroad throughout the community the knowledge of a truth, awful in its significance, and absolute in its application, a truth of which legislators and philanthropists are outrageously ignorant or scornful—the truth that there is no duty so imperative and no self-interest so evident as the duty and the self-interest of the endowment of institutions of preventive and didactic medicine. When the power-squandering legislator or the wealth-squandering capitalist falls ill, the first thing he does is to call a physician to rescue him from death. Power and wealth would he gladly give for health and lengthened life. But he does not then ask himself if he or his fellows have given a word or a dollar to enable that physician to discover the causes, and thus to prevent the existence of disease in the abstract. And neither by word nor deed has he done anything to help that physician to outfit himself with the knowledge and experience necessary to deal successfully with his own individual ailment. We should, therefore, by iteration and reiteration pound it into the brains of these silly folk that such a proceeding is simply a lack of foresight, a failure in

simple prudence. In financial matters they know enough to create sinking funds and prepare for coming drafts and liquidations, but they are ignorant of the most palpable self-interest in the matter of the financial value of life and health, and the dire expense of disease and death. It is the duty of the Academy to teach financiers some financial good sense.

Dr. Bayard Holmes tells us that the productive funds of the theologic schools of the country amount to seventeen or eighteen millions of dollars, whilst those of the medical schools amount to about one-half of one million. I have no sympathy with those who would scorn the value or belittle the dignity of the science of theology. But in all candor what egregious injustice and imprudence, financial imprudence of the most literal sort, does not this fact show up? Personifying the community as an investor of capital does he not really exhibit a mad-house economic science? Which yields the best mundane and cash interest, the investment in M. D.'s, or that in D. D.'s? Jenner saves the community more dollars in one year than all the endowments of all the theologic schools of all time. Behold the financial wisdom of the world that makes an investment thirty-five times as great in heavenly stocks that have never declared a single earthly dividend, as the stingy subscription in a company that infallibly divides an enormous per cent. profit in hard cash every year! It is agreed that within a few years medical science has lengthened the average life some three or four years. This proportionately postpones and lessens the number of funerals and funeral processions, does it not? Well, now how much do you suppose the community pays the undertakers and the liverymen? The saving in cab hire to the community from these postponed funerals would alone richly endow every medical school in the land! This is a *reductio ad absurdum* of a peculiar sort, but isn't it literally

true? We are compelled to this kind of argument to arouse the attention of our remarkable democratic investor. Gratitude for the saved life and the postponed death we do not expect—Lord Demos has no love for his medical friends—but we do wish we might have this saving in cab fares wherewith to endow a dozen hygienic institutes, a score of bacteriologic laboratories, and two score of medical schools.

Behold plainly the necessary results of not endowing schools of preventive and didactic medicine :—

1. The putting of the most precious thing in the world, health and life itself, in the hands of men uneducated either as regards general literature and science, or as regards medicine. No one of us—indeed, not one of the poor fellows himself so dumped into the community—has anything but pity and scorn for the medical outfitting of a man who is compelled to take charge of seriously ill patients, without general preliminary training, and with only ten or a dozen months of medical theoretic study. What an outrageous mockery ! After many years of profound study and experience a schooled mind feels most poignantly the inadequacy of known science and the bootlessness of rich experience to deal with the unfathomable mysteries of disease. It takes half a lifetime to learn how *not* to make *useless* mistakes. But to take a boy so untrained that he can't spell correctly any five Anglo-Saxon words, and after a few months' lecture-taking and mnemonic cramming to place in his hands the awful responsibility of the life and health of hundreds or thousands—surely this is a farce worthy only of our civilized barbarism.

To illustrate, let me show you a printed sheet containing a student's notes on the differential diagnosis of four varieties of tumors. It needs to be remembered that the student making the notes was about to graduate in 1893, and that the school in which he studied makes much of its

preliminary entrance examinations. The young man was an amateur printer. He set up the type himself, corrected the proof, and himself printed off a number of copies for the use of his classmates.

ENCEPHALOID.

- 1 Soft elastic not uniformly so
- 2 Groth Rapid Large
- 3 Adhesions, Earley and Slight
- 4 Pane, Wandering until ulceration then fixed and servere
- 5 Veins Large
- 6 Foul ulcer fungating edges ex-curved undermined much bleding
- 7 Glandular envolvment early
- 7½ Comes at any age
- 8 Seat, Breast, Testicles, Uteris, Overies, Prostate and Salivary glands.
- 9 Duration 9-12 m fatal.
- 10 Nipple not retracted.
- 11 Histary Bad.

SARCOMA.

- 1 Firm, generally irregular soft and flucuating apperently.
- 2 Rapid and Slow, Groth large size
- 3 Adhesions early.
- 4 Pane slight until, ulceration then more
- 5 Veins moderate.
- 6 Foul ulcer, great bleeding,
- 7 Glandular envolvment late.
- 7½ Any age.
- 8 Seat connective tissue extremitities of bones periosteum, brest.
- 9 Long duration before fatal
- 10 Nipple not retracted.
- 11 History good.

SCHIRRUS.

- 1 Hard, inelastic.
- 2 Groth, Moderate and Small.
- 3 Adhesions, Late.
- 4 Pane, Earley and sharp fixed.
- 5 Veins, Modaily large
- 6 Edges, Hard thickened abrupt little bleeding.
- 7 Glandular envolvment, Late.
- 7½ after 45X
- 8 Seat, breast uterus stomach rare in overies and testies and Prostat
- 9 Fatal 18-36 mts.
- 10 Retracted nipple.
- 11 History good, excema of nipple may precid it Pagits diseas.

ADENOMA.

- 1 Hard elastic.
- 2 Growth slow.
- 3 Adhesions rare.
- 4 Pane neuralgic and menstrual.
- 5 Veins not enlarge.
- 6 No Bleeding
- 7 No glandular envolvment.
- 7½ Under, 30
- 8 Seat, brest.
- 9 Not fatal.
- 10 Nipple not retracted.
- 11 History good

2. The lessening in the proportion of men studying medicine who have had college training. Again we are indebted to Dr. Holmes for his sad showing of but some fifteen per cent. of such students in the United States. When a profession fails to attract the college-bred men, something is certainly radically wrong somewhere. The wrong is essentially the love of the community for quackery and medical humbug, but the "somewhere" can only be more definitely located as due to the general lowering of professional character and standards due to dumping thousands of uneducated boys into the profession.

3. And the fault of the dumping process must lie with the commercialization of medical teaching. Men, however, must be taught in some manner and to some degree; and, with unendowed schools, the motive of teaching must be as it too long has been, and too much still is, the earning of money, or more commonly the making of consultation practice by the fact of professional honor and position. Hence the inevitable result, the necessity of graduating as many students as possible, regardless of fitness or acquirement. It thus comes about that proprietary or commercial medical colleges do not generally willingly advance the standards, either of entrance or of graduation, and they lengthen the period of study only as they are forced to do it by the example of university rivals or in shamed deference to public opinion. The rule does not hold in Buffalo, doubtless in other places also, and in Philadelphia we have one splendid exception to this sad law. Led by the glorious example of the University of Pennsylvania and fired with the pride of sex, supplemented also by a genuine love of progress, our noble Woman's Medical College has adopted the four years' graded course in advance of two large medical schools for men.

Excellent instances are pointed out, that show proprietary medical schools advancing the standard, and at least

soon following the example of endowed schools in lengthening the course and broadening it to meet the demands of the entirely new scientific school of medicine so suddenly and so lately come upon us. Such exceptions both prove the law and test the rule. They are what they are despite the natural tendency, and because of the dignity of character of the governing and teaching body. If half a dozen men own a college, absorb all its revenues and honors, it is asking too much of unconverted human nature to expect them to tremendously enlarge the paid teaching body, dividing both the emoluments and fame, by reorganizing the school to meet the entirely changed demands of to-day. It may sometimes happen, but, alas! it may often not happen. It is nothing but opera-bouffe medical education to pretend to fit modern physicians for their work by a half dozen or so men talking a few hours a week at a half thousand boys for two or three half years. Sometimes the half dozen may be united in harmonious ambition, and with dignity "tide over" the passage to a better future. But sometimes, too, the plan may result in making a school a hotbed of politics, of injustice to alumni, and of mutual jealousies.

Possibly the dying economist thinks he is doing his duty to the health of the community and to medicine by the endowment of hospitals. It is, indeed, becoming fashionable to endow free beds, to dance and conduct lotteries, as the newspapers say, "for sweet charity's sake." Some good, much good has certainly been effected in this way, but it is time to modify, limit, and direct the thoughtless trend of sentiment before historic momentum increases so much that hospitalism will become a sad disease and hospital endowments will rival the wasted wealth of the present day English guilds. As at present managed it is useless to deny the enormity of the hospital and dispensary abuses already existing, impossible to ignore the dangerous

increase thereby of popular communistic habit, to forget the improvidence thus encouraged, and lastly the frightful injustice to physicians as a class. If these things can not be righted, the giving of money to hospitals without careful and sharp restrictions as to uses and abuses, the weeding out those able to pay, etc., etc., may become and has even now often become a public injury rather than a public benefit.

Let me illustrate how hospital endowments may be utterly turned from the purpose of founders and become at once engines of professional and social wrong. The Coventry Provident Dispensary, of England, came into existence in 1831. It now has a membership of some 26,000 in a population of some 50,000. The medical staff numbers twenty-six. Of course in founding it, and one of the founders still lives to bear witness, the intention was to provide medical services for working people and those who could not pay medical men. But now behold! On the ground that some of the medical staff receive small salaries from the endowment funds, the government of the hospital by a large majority lately passed a resolution to the effect that the well-to-do and rich should be allowed membership and so entitled to charity treatment as well as the poor.

Much of this sort of socio-economic depravity would of course soon ruin medical education and professional dignity. It is high time that we as a body of men haul up sharp and refuse to further aid in our own personal and professional self-degradation. This is a sort of suicide that can arouse only pity and contempt. If we are willing to become valets we are worthy to become valets. But even if we are willing, society should not be willing, because every gain of professional honor is so much gain for society, and every loss of professional self-respect is society's loss. Society, the ordinary citizen, should be more

jealous of medical honor and progress than physicians themselves.

But even if we left this aspect of the matter entirely by side, what is hospitalism at last but pecking away at results without a finger raised to shut off the everlasting production of these results? There is no need to remind physicians of their divine duty to heal disease, but there are two other duties far more divine: The duty, first, of training and fitting the physician so that he shall be capable of healing disease; and, second, the still grander duty of preventing disease. To train men in the knowledge and cure of disease requires an endowed college. The unendowed institution is doomed and must be supplanted by the institution that by reason of endowment is freed from the mercenary dictates of its patrons and of its proprietors, and that can provide the laboratory and clinical instruction needed to enable the physician to meet the arduous and exacting demands of modern science and modern society.

But the great problems of medicine are now summed up in the word prevention, and the greatest benefactor of the world is he who directly or indirectly neutralizes or kills the germs or origins of disease. There is nothing more hopeful for the future of medicine than the fact that physicians are eagerly turning their interest and labor to the work of hygiene and prophylaxis. There was much danger, and there is still some danger, that the nonmedical scientist—I mean the bacteriologist, the hygienist, and the scientific man abstractly considered—should seize upon preventive medicine and leave the physician the more restricted and subordinate domain of therapeutics. If this danger is not obviated through the retention of the grander domain by medical men proper, if they do not hold and lead in the work of prevention, then medicine would in a few years not occupy the proud and honorable position into which she is now gloriously entering. It is professionally a great

good fortune that Jenner and Koch were practising physicians. May it be that the coming discoveries in prevention shall also be made by physicians, and that we shall all do our work in the sanitary and prophylactic sciences upon which the welfare of society depends. Ours is the only profession that is literally and enthusiastically devoted to professional suicide.

And we must teach and beg society to help us to commit this divine sort of suicide. We must plead with our masters against their own blindness and indifference to us and to their own welfare. We must beg them to found and endow institutions where, while it is needed, men may best learn the therapeutic wisdom of the past, and also where they may discover the means to make therapeutics itself unnecessary. Pathogeny will soon kill pathology if we give it a chance, because pathogenic knowledge will stop pathologic function.

We should therefore seek to switch some of the money now fashionably and mechanically going to hospital endowments towards institutions devoted more directly to the better education of physicians in the therapeutics and the prevention of disease. Here is an almost unpreempted field and one that infallibly offers speedy and certain returns.

Like morning light surging upward from below the horizon's edge, we all see and know that the sun of scientific medical discovery is soon to rise upon our long darkened world. We all recognize that we are soon to discover the causes and the prevention of much of the pathologic evil that has filled the world with suffering and gloom up till now. If we could but have the means, if concentrated effort could be brought about, if the awful opportunity could be grasped!

There are two sources whence may come the endowments of institutions of didactic and preventive medicine;

From communal, *i. e.*, governmental gift, or from private bequest.

Shall we also feed at the public crib, or seek to do it? There is not the least discussion as to the abstract duty and self-interest of the state to do this work. It is preeminently a state duty and necessity. The resultant good is the good of all, and more particularly is it the good of the coming race. The appeal is to the whole and to the future rather than to the individual and the present. Why then should not the state be educated and compelled to execute its most manifest duty? Simply because the object we seek to realize is an ideal beyond the mental grasp and the moral strength of Lord Demos. In his heart of hearts Demos loves magic and quackery, and in a representative form of government the representor cannot rise far above the moral and intellectual level of the represented. We must do good to men, we must give them good gifts, even though they at first scorn both the gifts and the givers. This is the attitude of mind of all great men. True gratitude may be ours only after our ears are deaf and dead to the word of belated thanks.

But there are other reasons why we should not rely upon the government. If the unselfish and worthy may be thus aided, the selfish and the unworthy will bedevil the legislator out of his wits until he consents to their clamor. With state legislatures voting the people's money for hypnotism, homeopathy and humbug and the like, and protecting the infamies of the patent nostrum vendor, what may be expected of Demos and his representatives? In Pennsylvania and elsewhere things have already reached the pass of taking every petition from every institution that by the most ludicrous twists of logic do dub themselves charitable, and after footing up all the figures, vote a small lump sum to be divided *pro rata* among all. Each thus gets at least an ear or a nubbin, and the representative can smile at his

constituents until the next election! It thus becomes doubtful if the success of the best institution in securing a governmental grant, even for the best medical purposes, will not in the long run prove a cause for regret rather than for congratulation. It forms a precedent that will enable proprietary and private greed to secure the same benefits, and thus the evil will grow as fast, perhaps even faster, than the good. The watering tongue and the long carnivorous teeth of "me too" will be well hidden beneath the cloak of charity. And if all that the community thinks medical were really so! If we were a united profession! But the sectarians make it impossible to speak to the community with one voice.

I think our reliance must be upon private bequests, and these can be secured only as we educate and interest the rich. We must never weary in showing the neglect of the greatest, most palpable, most certain means of doing good. There is a strange fatality in men, an unaccountable inability of seeing the need that lies nearest, the good that is dearest. There is more money to-day devoted to astronomy than to the prevention of disease. It is positively wonderful to think that men should be more interested in stars and constellations than in their bodies and their physiologic life.

As educated men there can be no question of our preference for the institutions of didactic medicine that encourage the better preliminary education. We have shivered to learn that the proportion of college-bred men entering upon medical careers is so ignominiously small, and that it is decreasing. To medical schools connected with universities we should therefore seek to divert the streams of endowment. Assuredly the most ludicrous of beggars is the proprietary school seeking endowment without limitation of the professorial salary of the professorial proprietor. If private persons wish to make presents to their private pro-

fessorial friends, it is a good thing—for the friends—but the donors may hardly lay claim to much intelligent perspicuity or to a large humanitarian love.

And so far as relates to the education of practical physicians a most pathetic negligence is that of medical scholarships. There may be such, but I do not know of one in the United States. The first noble attempt or example in this direction is that of the College of Physicians and Surgeons in Chicago, which has offered free tuition to ten students each year for the purpose of encouraging a higher standard of preliminary and medical education. All honor to the men and institution that set the example. Thousands of scholarships exist to help struggling ambition in the fields of general collegiate training, in theologic, technologic, and in general scientific education ; but with some experience and observation I have never elsewhere witnessed purer ideals more heroically pursued through years of penury and suffering than by many medical students. Everybody seems to think it of no question, even a matter for mirth, that a medical student shall endure unspeakable bitterness and loneliness in seeking to prepare himself for a work of the most primal importance and value to the community. If good citizens wish to help noble young men, if they wish to forefend and brighten many tragedies silently and manfully borne, let them look among medical students. Thousands would gladly give more years than the schools demand to their studies and preparation if by rigorous and unanswerable necessity they were not driven out to speedy bread-winning with its resultant experimentation on the lives of their fellow-men.

Let us, then, go back to our lay friends with a message, a new gospel we must be absolutely unwearied in preaching—the message of a new, hitherto-neglected duty to a new, hitherto-neglected science of medicine. Let us prove to them a hundred times over that the best good abstractly

is freedom from disease, a healthy life, a reduction of a needlessly high death-rate. Viewed from a low standpoint alone, there is no investment in money so certain of interest, and of so high a rate of interest, as the investment in saved human lives. Let us urge again and again the services of medical men to the community. Where would have been our navies and their victories with scurvy still a scourge? What a saving in money to the English government is that shown by the reduction in the Indian army death-rate from ninety in the thousand to thirteen in the thousand. Pasteur's bacteriologic studies are estimated to have saved France as much money as the entire German indemnity payment. Can the financial value of the work of Lister be estimated, so enormous is it? In the German army by compulsory vaccination, smallpox is nonexistent, and all over the world, despite the antivaccination cranks, vaccination has saved the nations more money than their present national wealth. We are almost certain that by a similar procedure the dread scourge of cholera may be likewise stopped. Lastly, there are your insurance statistics and premiums showing beyond all negation or quibble the lessened death-rate. Compute by average wage and average length of life the money value of a human life; then multiply and again multiply the three or four years of lengthened life due to medicine of every one in the nation, and in all civilized nations, and compare this amount with the total values of all wealth! Then it may become manifest what medicine has already done, but before and beyond all what she still promises to do if she have but a tithe of the sympathy and help she deserves.

CHARITY-ORGANIZATION AND MEDICINE.*

No subject is more rich in suggestion and in acute demand than that of the relations of medicine to those dependent upon the community by reason of crime, of disease of body or mind, or of defect, congenital or acquired. Of these classes not one is devoid of medical relations, for as counsellor, as curer, or as preventer, the physician's voice should be heard. If we do not strike hands with Lombroso and say that all crime is due to abnormality of organism, certainly crime and disease have *some* most intimate relations. What are they? What likewise are the subtle bonds that link together disease, physiologic or neurologic, with mental abnormalism? We do not seek to escape from our responsibility for much of the world's blindness; the idiot is physiologically defective; otology and laryngology have not said their last words as to deaf-mutism; every United States pensioner holds a physician's certificate (more's the pity!); have the surgeons done all that is possible for the cripples? Have we no accountability for pauperism, no responsibility for the criminally high death-rates, and no guilt for the criminally low average length of life? In the mysterious tapestry of civilization disease is weaving a thousand miscolored and rotten fibers that mar its beauty, spoil its design, and weaken its strength. Shall we longer permit with careless consent

* Abridged Presidential Address delivered before the American Academy of Medicine, at its meeting in Jefferson, N. H., August 29, 30, 1894. From the *Bulletin of the Academy of 1894* and from *The Medical News*, October 13, 1894.

such negligent and fateful weaving? Nay, shall we longer consent to be ourselves such weavers?

And when one faces these problems, how they grow! At first it seems as if the interrelations of the profession, the dependent classes, and the lay community are few and comparatively unimportant, but with sharp observation we see long and strong bands of cause and effect subtly running out and in, like warp and woof, linking and locking one with another and each with all.

One of the strangest and most dazing truths that soon becomes manifest is that charity as commonly practised is sin. The word, like many another, bears witness to the sad history of mankind. The beautiful Greek word is almost untranslatable into English. Its gracious compassion or tender pity has become simply almsgiving—a thing usually a double curse, degrading both to the giver and to the receiver. To relieve suffering is the delight and the duty of all good hearts; but we must see to it, 1. That the suffering is real and not fictitious; 2. That, if real, it is not deserved; 3. And most important, that by our methods we do really relieve and do not increase the suffering. It is just here that we run across the first principle of the charity-organization societies, which is to make benevolence scientific. It only needs a few bitter experiences (and we have all had many such, I suppose) in relieving supposed suffering without investigation, in giving doles to street beggars, or in cashing checks for unfortunate acquaintances, to give us most convincing proofs that under existing circumstances and as human beings are at present constructed, noninvestigating relief increases the evil it thinks to lessen.

Last year at the Philadelphia Hospital I was puzzled at my vain attempts to cure what seemed a case of simple conjunctivitis. After weeks of varied therapeutic measures I suspected and demonstrated that the "tramp" anointed

his eyes just prior to each of my visits with a strong solution of soap. In this way he avoided being turned out upon a cold world until springtime came. Another fellow, so long as he remained under treatment, was in receipt of \$5.00 a week from the Cigarmakers' Union, and he could at pleasure induce a subacute attack of iritis, filling the anterior chamber of the eye with blood by a very energetic bit of ocular massage. The older surgeons at the Philadelphia Hospital were often puzzled by the unusual difficulty of healing chronic leg-ulcers, until it was found that the owners did not *desire* to have them healed, and prevented healing by tightly binding in the ulcers old-fashioned cents.

It has for years been my practice to give every street beggar a charity-organization card, with promise of relief if he should be found worthy by the agent of the society. Only one has ever returned, and he was set right without any almsgiving. In China the making of monstrosities was a regular business by putting children in pickling vats for years, by breaking and mending their bones, or by transplanting upon their bodies bits of the skin of animals. We are horrified at this, but are we not equally infamous with our dime-museum glass-eaters, our foundling-asylums, and our patent-medicine beastliness?

Mendicity is mendacity. The crimes of tramps and street-beggars are only surpassed by the crimes of those who give to them. Mendicancy in all its forms and masks is not the result of poverty, but is the cause of poverty. All indiscriminate almsgiving, all wholesale crowd-relief, or collective-relief of want or suffering, is either a forged, to-be-protested promise-to-pay note of sympathy, or it is the payment of wages for something done. Nine times out of ten it is selfish charity, or self-flattery. Foolish people love to flatter themselves that they are kind-hearted. Benevolence is fashionable, and fashionable people—are fashionable!

One of the most debauching and disgusting forms of selfishness is that of indiscriminate philanthropy. For downright diabolism witness the mutual hatreds of two rival professional philanthropists! Almsgiving, on the other hand, is wages: by giving to beggars and tramps we pay for the continuance and increase of beggary and trampism; by Sunday breakfasts we increase hunger on Sunday mornings, and we also secure listeners for our pseudoreligious after-performances; by indiscriminate outpatient relief we stimulate the production of disease, hire patients to experiment on, increase our own reputation or that of our hospital, and at one fine stroke pauperize both the profession and the populace; by municipal workshops, State aid to the unemployed and socialistic demagogism we hire people to be unemployed, to strike, and to lessen the sum-total of production; by institutionalism gone mad, we hire the people to get rid of their personal duties to their dependents, and hire those on the borderland of breakdown, physical or mental, to give up the last instinct of self-help. We pay for these things and many like them when we give alms and taxes and hire other people to be sympathetic for us. Of course, what we shirk doing ourselves, our hired agents will hardly do better. "Like master, like man."

Appalled by this condition we, perhaps, stumble upon the work of the charity-organization societies, and at once we have a clear statement, both of the etiology and the treatment of the disease. Of all things these societies beg that no living spark of compassion or good-will shall be quenched, and no hand reached out to help shall be permanently withdrawn. There is a profound danger that, chilled by ingratitude and fraud, the foolishly kind shall become the foolishly cruel. If so, it only proves that their former charity was as selfish as their present uncharity. They gave before to please themselves, and refuse help

now for the same reason. Charity-organization, as I have said, aims at making kindness effective, benevolence scientific. The heart must inspire, the intellect carry out. The brain is an inhibitory organ, whether we view it physiologically, scientifically, or sociologically. But inhibition is regulative, not destructive. In the amelioration of the afflictions of mankind, it is only the intellect that can guide to lasting results, but, like the governor of the engine, it cannot supply the living steam, and it would certainly not advise "no steam."

As stated on the title-page of the excellent little *Hand-book for Friendly Visitors Among the Poor*, compiled and arranged by the Charity-Organization Society of the City of New York (published by G. P. Putnam's Sons), charity must do five things :—

1. Act only upon knowledge got by thorough investigation.
2. Relieve worthy need promptly, fittingly, and tenderly.
3. Prevent giving unwise alms to the unworthy.
4. Raise into independence every needy person when this is possible.
5. Make sure that no children grow up paupers.

Or, we might say :

1. Don't help frauds.
2. Help so as to make future help unnecessary.
3. Don't hire people to be miserable.
4. Prevent dependency.

All of this, once more, seems to have little medical bearing ; but it is only seemingly so. The booklet contains an important and excellent chapter on sanitary suggestions by Dr. Charles D. Scudder. It should be remembered that it is only an A B C book, so to speak, designed only to guide beginners, to interest, and to lead on to the deeper purposes of the organization. I hope every member of the Academy will get and read the book issued by the Johns Hopkins

Press, and edited by President Gilman, entitled *The Organization of Charities*, being a report of the Sixth Section of the International Congress of Charities, Correction, and Philanthropy, Chicago, June, 1893. In the last twenty years at least ninety-two charity-organization associations have been formed and are now actively at work in our country, whilst many hundreds exist in Europe. The English Charity-Organization Society is also publishing a series of manuals, of which I mention as of special interest to physicians, one on the feeble-minded child and adult, and one on the epileptic and crippled. Another volume is devoted to insurance and saving (intimately bound up with disease and the medical profession), and there are others on food, on medical charities, on the training of the blind, on the dwellings of the poor, on idiots, imbeciles, etc. The most cursory glance at these works will show how deeply into the whole organization of society the seeds of this ideal are striking root, and how intimately blended are they or may they become with those of medicine.

But before we can be very consistent or whole-souled charity organizerers we must first clean house ourselves. We must practise what we preach. There are few more outrageous sinners against the principles of the organization than our profession itself. The London *Lancet* has recently been weeping very profusely over the failure of the public to respond with sufficient liberality in financial support of the hospitals of London. Curiously enough, the epiphora seems to be caused by a respectably-sized beam in its own professional eye. To justify the tears it cites the number of cases treated in the one hundred and eighty-one London hospitals during 1803. The figures are so huge that it is necessary to quote them in full.

SUMMARY OF TABLES.

	HOSPITAL SUNDAY FUND AWARD.	IN-PATIENTS.	RELIEVED.	CURED.	CONVAL- ESCENT- HOMES.	REMAINING UNDER TREATMENT.	DIED.	OUT-PATIENTS' VISITS.	ACCIDENTS AND EMER- GENCIES.
General Hospitals	£17,378	49,835	14,027	27,607	4,614	3,476	4,910	1,442,447	222,733
Special Hospitals	11,747	28,426	8,615	14,466	2,611	2,741	1,974	1,203,830	20,876
Convalescent Hos- pitals	4,069	25,324	7,419	15,421	68	1,288	209	11,974	192
Dispensaries	1,873	.. .	..	..	..	..	..	1,213,039	..
Total	£35,067	103,585	30,061	57,494	7,293	7,505	7,093	3,871,290	243,801

Let us leave out of consideration the in-patients (over 100,000) and the accident cases (243,801), and fix our attention for a moment upon the (nearly) four-million visits of out-patients. It strikes me that if any hysterics are justified in reference to this appalling figure it would be hysterics of indignation. Can any conscientious physician, can any sane man, believe that this number of people have been adequately considered, and had careful diagnoses made, and discriminating scientific treatment instituted? Can he believe that a vast proportion of these patients were unable to pay some fee for the service rendered? The whole affair begins to become ludicrous. The sentimental grimace of the charity-tragedy is plainly broadening into the guffaw of opera bouffe. The cloven foot of selfishness on the part of those lucky or powerful enough to get in charge of these hospitals is all too plainly evident to allow us to be much grieved at the moans and wailings of the melodramatic artist. The competition for these hospital positions among the physicians of London, and everywhere else, for that matter, is vicious and intolerable. It is a question of *saute qui peut*, and *After us the deluge*.

But there are some 3000 medical men in London not connected with hospitals; what of them and of their professional interests? Go where one will the same astonish-

ing hospital-abuse glares at us. We are debauching and pauperizing both the profession and the public by this gigantic nuisance. Money given for the endowment or support of hospitals is likely to become a curse instead of a blessing to humanity, unless certain provision is made against indiscriminate free treatment. Indiscriminate medical charity is just as pernicious as indiscriminate almsgiving. One is disposed to ask if it might not be well to save much labor by adopting the plan of Louis XIV and Louis XVI, and gratuitously send out millions of bottles of medicine all over the country, with accurate directions "for the relative indication" for taking, etc. Perhaps, even better, we might farm the entire business out to the American patent-medicine syndicate!

We should also not forget that the absorption of medical energy in the free treatment of disease by those who could pay keeps the profession bound in the treadmill of drudgery and of piddling cures, whilst the nobler and infinitely more important sciences of public hygiene and preventive medicine are left unfurthered or are turned over to the nonmedical world. Thus in this blind man's race we rush impetuously to a silly suicide.*

How difficult it is to get either the profession or the

*Specifically, the chief defects of the hospital craze are thus set forth by the Charity-Organization Society in a petition to the House of Lords:—

1. The promiscuous congregation in out-patient departments of large crowds of persons, who in most instances are suffering from slight ailments for which skilled hospital-treatment is quite unnecessary, is a constant hindrance to medical instruction, increases the discomfort and pain of those who are suffering from severe maladies, and occasions much vexatious and needless waiting.

2. The indiscriminate admission to the benefits of hospitals and dispensaries tempts many who could pay for medical relief to become occasional recipients of charity, and by degrees habitual paupers.

3. The provision of gratuitous medical relief to large numbers of persons, both as in-patients and out-patients, without inquiry or any sufficient regulation, is, as investigation shows, a serious obstacle to the promotion of provident in-

public to take any interest in prevention! Rather than stop the causes once for all, all prefer to peck away at the ever-recurrent effects. Dr. Benjamin Lee tells me that every year the State of Pennsylvania gives \$200,000 or \$300,000 to hospitals, while all that could be secured for the State Board of Health last year was \$6000.

Up to the present generation charity has been a blind, benevolent tyrant; now charity-organization proposes to introduce the justice of freedom, the independence of a true democracy. Instead of charity of the modern sort

stitutions at which medical treatment can be secured by small periodical payments.

4. Hospitals and free dispensaries, as at present administered, usually offer no special advantages to those artisans and laborers who have combined to make provision against times of sickness, and there is no recognized relations between these hospitals and dispensaries and provident institutions.

5. There is no clear and definite division of the work between voluntary hospitals and dispensaries, and poor-law infirmaries and dispensaries, but the former deal with cases which might more properly be left to the poor-law, and the latter with cases which, from their medical interest, or special requirements, or from the character and circumstances of the patient, might more properly be treated in charitable institutions.

6. By the multiplication of gratuitous and part-pay institutions, and the absence of regulation or organization, those medical men whose practice lies among the poorer classes are, year by year, more severely hampered in making a livelihood.

7. There is keen and continuous competition between hospitals which spend, year after year, sums considerably larger than their average income would justify, and are thus driven to resort to all manner of contrivances to meet their liabilities.

8. Year by year, also, new hospitals are (sometimes under very doubtful auspices) established for the treatment of special diseases, without any reference to the provision already available.

9. The hospitals and dispensaries are often ill-grouped for local purposes, and though sometimes a hospital and one or more dispensaries are, from their position, conveniently placed for cooperation, there is no settled relation or agreement between them by which cases may be transferred from dispensary to hospital, and *vice versa*.

10. There is no uniform system of keeping and publishing accounts.

we are to have the gracious dignity of personal kindness. Instead of a weak sentimentalism that increases the evil, let there be the wise benevolence that prevents it. Instead of vicarious almsgiving there must be a direct and personal helpfulness that usually leaves out of the count all financial dealings. The ideal seeks to cure where it can, but always to prevent the deplored evil.

What is the evil? Dependency. It is, as I have said, a duality of shame and evil, unwelcome alike to giver and receiver, and if not unwelcome, more's the pity! Every dependent is an unnecessary and an expensive burden to the community. It needs only one observation to show how intimately united, logically and by the most absolute necessity, is the work of charity-organization with that of medicine. There is hardly a dependent whose dependency does not spring from or is not related to physical or mental abnormalism. What is the physician's designation of such abnormalism? Plainly the simple word, disease. The dependent is the patient, curable or not, of society, and he is also the patient of the physician.

There are two classes of such patients: those directly the result of disease or defect, and those indirectly or partially so. In the first class we have the insane, the idiotic, the crippled, the blind, the deaf-mute, the senile, the sick poor, the epileptic. In the second class we have the orphan, the criminal, the pauper, the alcoholic, the beggar, and the tramp.

The fundamental principles of the treatment of dependency by the charity-organization societies, are: 1. The personal relation; no patent-medicine cure, or therapeutics by the wholesale. 2. The permanent cure, when it is possible, by proper and thorough means, not the perpetuation and increase of the disease by doles and homeopathic *similia*. 3. The prevention of the disease in future by individual health and vitality. Surely no principles could be

more strictly medical. Every physician must heartily assent to them and seek to apply them. It is my chief object now to suggest that the methods advocated by these societies are genuinely medical, and that in dealing with these patients from the strictly professional standpoint, we as physicians have at hand a powerful therapeutic means spontaneously offered to us. Ours also are the duties of cure and of prevention. As ordinary citizens and members of society we must each become members of the charity-organization societies, and as physicians we should use this method of therapeutics just as we do hospitals, climate, nurses, food and sanitation.

In some respects it seems a great pity that as a profession we have allowed the beneficent exotic of charity-organization to grow almost wholly out of lay ground and not in the sacred soil of medicine. Having done so, however, it is the more our duty to nourish it all in our power and to help to disseminate its blessed fruitage. It is gratifying to learn that physicians are coming to recognize what possibilities of good lie in the movement, and how they are utilizing and guiding it toward splendid results. We may with absolute truth urge that with our professional help the ideal will find a speedier, a more solid, and a more lasting realization than without. It is for the welfare of the movement that its leaders seek to interest us and elicit our sincere and powerful cooperation. We indeed rest all our treatment upon the personal and single consideration; we must as therapeutists individualize our cases; we also aim to cure, not relieve and in relieving perpetuate the disease; above all things we too believe in prevention.

Applying these principles to the second class of our dependents we find a multifold variety of duties and methods at once springing into view. Even as to mendicancy we have an especial professional function. Begging is a crime

against the law. Let us help to put the law in action. The self-exposure of the crippled and blind, the shams of the pencil-peddler, the parading of suffering to elicit alms—such things should be stopped. They are usually masked under the excusing guise of physical infirmity. If real suffering exists, ten to one it is deserved, and even if so, there is a proper mechanism of relief and cure, which we as physicians can make operative. It is better to hire such people to be warm than to be cold, to do something useful than to do something hideously useless. There is a place and a possible useful occupation for every tramp and every beggar. Most of them do not want to have their infirmity healed. Ours is the duty of unmasking at least the physical fraud.

And we also know as few others the influence of idleness in the production of pauperism and disease. The physiologic inaction of the occupants of our poorhouses and asylums is a prolific breeder of disease and preventive of cure. Let us help to do away with this foul shame. Our descendants will wonder at our heathenish cruelty and shortsightedness when they read that we house our insane, epileptics, paupers, and even our criminals in forced idleness at an enormous expense to the thrifty producer, and with multiplication of physical and mental evils.

Much of our institutional life is a practical reward for and promoter of laziness, a destroyer of the safeguards of health. The charity-dribblets and free-soup philosophy of life is despicable. Rather than cheap and free food we should teach the poor the proper choice, the proper cookery, and the proper use of food. Any American family wastes more food than would keep a French family of the same social status, but it will be a long time before our people listen to Mr. Edward Atkinson's advice in these respects. A few years ago my friend, Mr. Bond, of Cambridge, England, took charge of the poor-law administration of the

city. By the methods of charity-organization he has already reduced the municipal annual expense of this item from about \$40,000 to \$15,000 with great coincident improvement in the condition of the deserving poor. There are some 218,000 out-door senile paupers in England, and yet in twenty years the mere fall in the prices of food, etc., would have enabled every one of them to have insured himself against pauperism had he but saved his excess and from 1874 applied it in the way of insurance-premiums. In Buffalo, N. Y., a comparison of twelve years with out-door relief with twelve years without out-door relief showed a saving of \$700,000—and also a saving of in-door relief of over \$400,000—in all over a million dollars, and a less number of paupers to-day than fifteen years ago.

As to the criminal, it is yet an open question how far his condition is a result, direct or indirect, of congenital or acquired disease. The relation at least needs to be carefully studied by medical men. But that the criminal should be an expense to the law-abiding thrifty is outrageous.

But it is to the prevention of pauperism that we should look most sharply. Let us see, for example, if we cannot avoid the evils of the English system in its treatment of destitute children, who are crushed together in orphan-asylums and "barrack schools," from 200 to 1400 in each. This costs the producer \$150 a head, almost one-half going for officers' salaries.

If we turn to classes of dependents whose conditions result almost directly and wholly from disease we are struck by the magnitude of the task and the multiplicity of methods of cure. It is not my purpose, because of lack both of ability and of time, to review the etiology and suggest the treatment of the evils of insanity, of epilepsy, of idiocy, and the like. It is only by the cooperation of a thousand minds working through many years that we shall reach any satisfactory solution. I desire only to ask the

question, Shall we as physicians, and especially shall the American Academy of Medicine, undertake to help in the great work?

As to the hopeless idiot, the impossibility of cure, and the impossibility of reaching the ultimate causes of the production of this class of cases, have led some to the question we all shrink from asking. And yet, despite the dangers, there are those who see no really valid argument against the many valid ones for a legalized, public, beneficent sentence of painless death upon him. We each silently vote the sentence in our silent prayer that if we should become hopelessly idiotic we would not wish to be allowed to live.

The blind, the needlessly blind, are the ghosts in the empty chairs at every ophthalmologic banquet. We are glad that best efforts are being made toward the chief reform. Alas! that we cannot pay the lobbies to get a little law passed to prevent much of the world's blindness. Politics has reached such a state of degradation that a definite sum of "blood-money" seems often required to secure the most cryingly-needed legislation.

The crippled, the chronically diseased, the deaf-mute, the prematurely senile, etc., all have the most vital relations with medicine. We can do much to cure and to alleviate, and all may be made self-supporting, and certainly made more happy, by self-help and self-dependence.

Perhaps of all diseased people the epileptic demands our greatest compassion, and it is precisely he that reacts most wonderfully to our treatment. It is again sadly strange that the best treatment has been devised by the nonmedical. Our failure to cure by drugs or by the trephine should have stimulated us to increased effort instead of shaming us into inaction. Intellectual and sensitive, otherwise able-minded and able-bodied, the epileptic is thrown out of work and out of ordinary social life by his mysterious malady. It is gratifying to know that the colony-plan has

at last found a footing in England and in America, but it is horrifying to know that there are to-day thousands of these* shunned and shunning, suffering souls deprived of the happiness that might so easily be theirs.* There is probably nothing in the world that is such an inspiring example of beneficent blessedness as the Bielefeld Epileptic Colony in Germany or the Magull Home near Liverpool, England. Most if not all of you know well enough about these places, and I need not weary you with details. If not, read the account in the *Charity-Organisation Manual*. At Bielefeld in 1891 there were treated 1277 patients, if patients they may be called in this beautiful home-like place, at once most hospitable, but most *unhospitable-like*. The colony is largely self-supporting. At the Magull Home, a relatively small institution, but perhaps all the better for that, the "home-treatment" with no bromids, or very little, is remarkably successful. "In fourteen of those who passed through the house during the year, the fits had been arrested at the end of the year." "In the case of twenty-two patients the fits in the first half of their stay during the year numbered 1673, but in the second half, 948, a decrease of 725." Dr. Alexander believes that such homes may be made entirely self-supporting. There is no idleness. Idleness, as Dr. Ferrier says, "increases the instability of the nervous system." The chief and necessary therapeutic measures are country-life, home-life, employment, congenial surroundings, good nourishment, and little or no bromid.

I had a number of notes and gathered data of interest as to crippled children and as to feeble-minded children and

* In Germany the number of epileptics is about one per thousand of the population. Dr. Peterson puts the number of epileptics in New York State alone at double this number, or about 1200. This would give us in the United States about 130,000, an infinitesimal portion of which only has proper care.

girls, and what may be done for them ; but I must pass the subjects by.

Another reproach of medicine, and especially of psychology, is insanity. To this I can also make but passing reference. A prominent neurologist has lately passed severe criticism upon his brother-specialists as regards the treatment of insanity. That many of the criticisms are just few even of those "touched" would deny. But few would also deny that in many respects the charges were often greatly exaggerated, and that many qualifying or contradicting facts were left out of the count. Such, for example, were the unmentioned facts that in the city wherein he spoke the criticised "banishment of the white caps from the wards" had been of profound good, and that the desired abrogation of locks and bolts was also exemplified. Yet another is the fact that there are nineteen training-schools in the United States for the special training of nurses for the insane. But whatever has been done, there remain herculean tasks yet to do. What a shame it is that many thousands of overactive, unstrung nervous systems are in idleness, consuming body and mind, hopelessly and expensively, when the burden to the taxpayer, to the physician, and to the sufferer might be greatly lightened or entirely taken off by colonization, employment, and individualization.

And thus we ever return to the same repeated lesson, whatever the kind of dependency we study. The Charity-Organization Society has found a remedy for much, if not all the evils. It remains for us to aid, to utilize, and to realize the clearly realizable ideal.

It corresponds, for example, with the American character to do things in a large and lavish way, and we have the awful and growing evils of institutionalism. A dangerous habit is also exaggerating and deepening the evil : I refer to the voting of the taxpayer's money to private institu-

tions. In New York State nearly \$3,000,000 a year are thus given to private institutions for orphan children and the friendless. For charities and correctional purposes the State of Pennsylvania gives to private institutions about one-third of all amounts thus spent. In a series of years this amounted to about \$12,000,000. What a wretched and criminal blunder! In politics, as well as in sociology, we need to learn the lessons of other countries and of other methods. We have yet to perceive all the *reductio ad absurdum*, all the ironical truth of the pertinent question, *Quis custodiet ipsos custodes?* Mechanically-working, military-governed, outwardly-splendid, noncurative prison-palaces are not the proper or lasting solutions of the problems of dependency. Charity-organization says we must individualize our cases and get into personal relations with our dependents; and charity-organization is right. It says we must seek to cure, not simply to endure them; that we must give them interesting employment; that we must reward sanity and self-help, not encourage the weak to throw away self-respect; that we must get our dependents into the country and into an approximation to home-life, etc. And in all this charity-organization is right, and the way of the world is wrong. Let us adopt and carry into practice the better therapeutic methods!

HOSPITALISM.*

Definition.—The dispensary-disease, or hospitalism, is a contagious, epidemic, ingravescent neurosis of civilization, limited (it is to be hoped) as regards time to the present *fin de siècle* and—as regards geographic distribution—to urban populations; it attacks three considerable classes, the professional philanthropist, the commercial physician, and the social sponger, and, so far as medicine is concerned, is characterized by a maniacal propensity to professional suicide, and to the spread of the disease by the inoculation of the will with the germs of the affection.

Etiology.—In brief, there are two chief etiologic factors. The first consists in the morbid desire of the lazy charity-monger to perform his duties vicariously; the second springs from the ambition of certain physicians to “get on, regardless.” From the interactions and mutual complementings of these two cachexiæ arises the distinct type of disease called hospitalism. These two agencies may need an added word of explanation. The first, the habit of the professional philanthropist, united to the universal desire to satisfy conscience with vicarious charity, is a widespread evidence of religious and ethical anemia, resulting in multi-form sociologic denutrition and malfunction. The unregenerate layman, the civilized savage of modern times, is subject to a strange hypnotic delusion that the universal law of the biologic world antedating civilization is an egregious

* A paper read before the American Academy of Medicine, at Baltimore, May 4, 1895. Published first in the *Bulletin of the Academy*, 1895, and in the *Medical News* of June 22, 1895.

error. This law has up to now proceeded on the assumption that health and vitality are the conditions of permitted life, and that this health and vitality are based essentially upon pay or equivalence of service, upon personal self-dependence, desire, and effort. The modern philanthropist jauntily sets aside the wisdom of the ages, the necessities of evolution, and all that, and says he has a much better idea of how to conduct the universe than has God. Acting upon this antithetic science he says the conditions of social health are the encouragement of personal dependence and the increase of pauperism. His remarkable therapeutic theory is that to cure a disease we must administer a remedy that in health would produce exactly the symptoms of the disease. He therefore seeks to cure pauperism and dependence by increasing the number of paupers and dependents.

There is nothing so delightful to weak souls as the unctuous self-flattery of benevolence, and there are few things more satisfying than to rid one's self of a nagging duty. We thus have two classes of citizens: The tremendously large class that pay others to perform their personal duties, and the very small class of those that hire themselves out as agents of the first class. Charity and the personal relation to the poor and sick are thus deftly avoided by this copartnership, and alms-giving and institutionalism deceptively act as vicegerents of the genuine officers. This is the first factor of the dispensary-disease.

The second factor is confined to the medical profession itself. Like most other people, certain doctors desire to "get on, regardless." The vicarious and professional philanthropist offers him the means in the shape of institutions for the treatment of all other diseases except the hospitalic variety. (Perhaps in the progress of time and with the growth of virtue we shall have a special hospital in every large city where may be treated those in the acute and vio-

lent stages of the terrible disease, Epidemic Hospitalism.) If the enterprising doctor can get himself appointed "Professor," or "visiting physician" to one of the numerous institutions supplied by the vicarious philanthropist he will at once become better known; he will be furnished abundant "clinical material;" he will get ahead of his less fortunate brothers; and he will assuredly "get on, regardless." Lachrymose sentimentalism and philanthropic vanity are appealed to, endowments follow, wills and codicils to wills are made, and lo! there arise the lofty walls, the spacious wards, the waiting-rooms and operating-rooms, the crowded out-patient departments, the boards of wealthy trustees, and the not-to-be-forgotten medical staff itself.

Sometimes the physician bound to get on, the business doctor, *sans phrase*, conceals his ambition with the broad mantle of institutionalism itself, and it appears that the patient (the doctor-patient afflicted with the disease) indulges in a mild monomania of enthusiasm for his particular medical college, for medical science, and for the purposes of medical instruction. He solemnly contends that without an abundance of clinical material the best medical instruction would be impossible and medical colleges would languish. His by-standing *confrères*, not yet afflicted with the disease, smile pityingly, both at the patient's delusions and at the sorry belief of the patient that he is deceiving those about him as to the real motives of his mind. Those healthy-minded attendants know that there will always be an abundance of clinical material supplied by the worthy, the deserving, and the really poor, without the appeal of competitive medical charity to those who could pay for medical service. They also know that nine times out of ten his medical college itself has no ethical or scientific *raison d'être* whatever, but is itself simply another bit of objective evidence of personal and selfish ambition on the part of those who are "getting on, regardless" by means

of their "Professorships" and the advertisement of official position. If one has been vouchsafed a clear glance into the inferno of political chicanery and undiluted deviltry that often go on to secure a professorship in a modern medical college, he will have a perfect demonstration of the altruism and the purity of the "charity" at work among the candidates. Men do not smash the entire Decalogue and commit all the venial sins in order to get an opportunity to be kind to the sick or to teach boys how to cure disease.

The etiology of hospitalism may, therefore, be epitomized as consisting, first, in the morbid desire of the well-to-do to rid themselves of real charity and of the duty of personal hand-to-hand and face-to-face kindness, by the self-deceptive, vicarious makeshift of almsgiving; and, second, to the get-on-regardless physician, reckless of the good of the profession, greedy of office and of patients, even though they are of the nonpaying variety. Professorialism is only a variant of the disease of hospitalism, not a distinct type of disease.

Symptomatology.—The disease afflicts three distinct classes of society, and has a somewhat different symptom-complex in each class.

1. The first, the endowing class, many of them placed by death beyond the reach of criticism, is composed of those that mistakenly preferred to patch up effects rather than altogether to prevent them, and who left their money without proper stipulation of the conditions under which their trust should be administered. Theirs is a mournful error. There are so many ways, especially in medicine, of preventing disease, of killing the causes of diseases, instead of curing the individualized results, that it is shameful that they did not add wisdom to pity, and to kindness, intellect. If we could but show the benevolent how much greater and more speedily reached would be the effect of their charity

if applied to the encouragement of preventive medicine instead of to curative medicine: One well-equipped and endowed laboratory of hygiene, of bacteriology, or of sanitary science would do more for humanity than a dozen hospitals. To prevent diphtheria is a million times better than to keep everlastingly treating children ill with diphtheria.

But the unwise endower of hospitals committed another intellectual sin—and in this world intellectual error at last and always results in millionfold moral error. He failed to condition his gift with the necessary limitation that as a result of his charity none but the needy and deserving should profit by it. Without that condition, in the mutations of time, his kindness becomes an engine of evil, both to them who receive and to them who administer.

The endower is sometimes the State or the city. The fact itself proves that giving to hospitals has so long been recognized as right, *per se*, that no regard need to be paid as to how the money is spent. It is a most remarkable fact, this of giving away millions of the public money without a single stipulation, and hardly without a demand for accounting. When given to public officers for State asylums and hospitals the precedent is bad enough, but to church, sectarian, and college hospitals, and even to private institutions—this decidedly is to be thought twice about.

In the scramble of the competitive medical-charity debauch, the hungry institutions have hit upon a plan of making the universal public a universal endower. Everybody must be made to feel how good he is and to experience the pleasures of almsgiving. We thus have every imaginable form and invention of beggary spurred to the limit of endurance and of impertinence. Hospitals Sundays, fairs, "dances for sweet charity," masked gambling, and heaven knows what else are instituted. It might, with self-restrained people it certainly should, suggest a little prudence to see how prominent in getting up and pushing

on these things are the wives, mothers-in-law, the personal friends, or the relatives of the ambitious visiting physician, or would-be professor, the advertiser, the newspaper doctor, *et hoc genus omne*. The motive of self-seeking is too often but poorly, very poorly, concealed, and sometimes it is thought good enough to boast about.

2. The second class, the lay-public, likewise suffers from the disease, although it thinks itself very cunning and lucky in having the disease. There are more diseases than hysteria that people love to suffer with, and the dispensary-affection is an example. There is no evil that is more ruinous than the awful one of communism. When a man gets that poison in his blood he will be a curse to the world until he is well-hanged, thoroughly dead, and everlastingly buried. There is no curse so fatal as the curse of desiring to get something for nothing. It is the half-hidden rock upon which the very ship of state, democracy itself, is running headlong. Nothing is serving so subtly and so powerfully to prevent physical and social health, and to keep the world in the thralldom of disease, as medical beggary and medical communism. When a man buys medical service for nothing he pays a high price for it. He cultivates the habit of lazy reliance on medical aid, and grows careless of hygiene. The people think they are fortunate in being treated for nothing, but instead of curing, the "treatment" really fastens the disease perpetually upon the very heart of the body politic. The medical profession is bound to the treadmill of curing individual cases and the effects of disease, instead of shutting off the causes of disease. The profession is so hardly pressed and so poorly paid that its members have no time to prevent disease. One of the great curses of medicine is the commercial medical colleges, with the resultant superabundance of doctors. The hospital and dispensary disease is encouraged by (nay, is one of the direct results of) the commer-

cial medical college, and the vicious circle is completed by the mere reversal of the process. The rivalries and ambitions and "politics" of competitive medical charities, displayed every day stark naked to the public, at once arouse and disgust the world, and keep low that standard of professional dignity and honor, so that the profession cannot demand and command health. Hygiene and preventive medicine could at once halve the death-rate if we had the respect of the community, if we but spoke clearly and could carry to realization the known laws of life-saving.

If the cunning Communist only got what he thinks he is sponging! But every physician knows well enough he does not get it. How can one man diagnosticate the diseases of a hundred patients with scientific precision and treat them effectively in an hour? I may not speak dogmatically of other departments of medicine than my own, but I must confess that out of hundreds of cases of hospital refraction work that I have afterward examined in my private office I have never yet seen one, my own included, that was correct. If only the *deserving* poor were treated, there would not be the crowds; if the physician received even the smallest fee, that fact would make the patient the master instead of the obsequious sponger; and then the doctor's work would have to be better, or the natural laws of competition would soon settle the fate of the bungler, and the "hustler," and the "cooker" of hospital statistics.

I am not at all certain as to the effect upon the social world of the free treatment of patients with syphilis and gonorrhea and alcoholism—a fact that constitutes a large part of hospital-disease. There are two sides to that question. I am not a little doubtful as to the ethics, and even as to the worldly wisdom of turning the hospital into an annex of the bagnío and the bar-room, a convenience whereby the natural punishment of the infractions of the sexual and hygienic laws (upon which life itself rests) may

be escaped. It is not quite certain that we can get the best of God in such ways. There is entirely too much of the "prophylaxis-of-gonorrhea" business tainting the whole profession, and literally befouling much hospital-practice. One might more dogmatically decide as to the wisdom of the common social commingling of the prostitute and the innocent in the hospital-wards and the dispensary waiting-rooms.

3. But the physician is interested in his profession, and the influence of hospitalism upon our guild is becoming pernicious in the extreme. Take the simple fact of hospital-manners. I well understand that neither the possession of the doctorate degree, nor the possession of the knowledge and skill it should certify, can make a man a gentleman. But there is no doubt that the instant influence of the necessity of treating crowds of mingled deserving poor and of indistinguishable spongers acts disastrously upon the physician's disposition and manners. The very work wherein gentle kindness is as the sunshine's benediction over the gracious harvest-fields of benevolence is transformed into bitterness and harshness. What is more disgusting than arrogance and dictatorialness in a physician? What is more common in hospitals and dispensaries? A dog judges of his master's mood by the manner and the *timbre* of voice, although he understands hardly a word of language proper. Every hospital-patient, likewise, forms quick conclusions as to the man's character under whose care he comes, and instead of gratitude for the service rendered the ungentlemanly physician is breeding through the community a condition of mind that bodes no good for medicine. The patient thinks himself sharp to secure some benefit from grudging surliness, and the overworked, non-paid, half-excusable doctor is glad to get through his job in one or another wretched way. "He has the European habit and style"—such is the patient's verdict. The pa-

tients know well enough when they are looked upon as "clinical material," and when, on the other hand, they are sympathetically treated as unfortunate human beings, whom we have the *privilege* of helping.

And this leads to the thought that nothing so speedily and surely as hospitalism leads to the degeneration of the physician into the therapeutic or pathologic fiend. If, as is well known, an interne or visiting physician hangs about a hospital beyond a certain time, the more certainly will he fail as a practicing physician. Every day in the hospital teaches him to dissociate disease from humanity, and to fix his attention upon morbidity, *per se*. He learns to treat disease and not the diseased human being. The laboratory, necessary as it is, runs the danger of becoming the execution-chamber of practical therapeutics. Every disease must be seen through the lens of personality before it can be thoroughly understood. There is no disease, there are only diseased tissues—and the tissues are alive, and there is a living soul unifying all the tissues into that strange product of life, Homo; and Homo is not one individual, but includes conditions, family, heredity, age. The rage for "clinical material" is becoming a genuine mania, itself a downright disease, a disgrace to curative medicine. Street-car placards and column-long newspaper "ads" soliciting patients are part of the expenses of some hospitals. From a daily paper I clipped the following racy account; it has too much of the air of truth to be more than half lie:

"A local employment agency has instituted a unique departure. A few days ago an advertisement appeared in the morning paper which read: 'Wanted—A young man suffering from pulmonary or heart disease. Examination free.' Inquiry at the office of the advertiser elicited the information that the 'young man' was wanted for the various hospitals about town, which were anxious to get live subjects for clinical demonstration. 'The applicants are received here,' said the manager of

the agency, 'and are promptly examined. The eligible ones, that is, those who are found to be victims of the two diseases in question, are given cards for presentation at the hospitals which we serve. They are paid well for their services, and they suffer no inconvenience from their experience at the hands of the surgeons. Sometimes, in fact, they reap benefits which they had not counted on, some of them regaining complete health under the treatment. So you see pulmonary and heart affections command a sort of premium. Sometimes we find among the applicants some cases even more interesting than we had expected. These men, of course, command more money than the ordinary sufferers.' "

But all these methods of trapping game are often only diversions of the strong, subdominant motive of practice-hunting and success-advertising. Just as the great professors give lectures at medical colleges in order to get consulting practice, so will men consent to bang through a lot of "charity-cases" at the hospital and dispensary in order to have the *éclat* of the position and the fame that in one way or another brings private practice. Sometimes, indeed, it is not by the indirect means of the fame that patients are secured, but upon one excuse or another—the *modus operandi* is well known—the hospital is made a very *direct* feeder of the private office.

And what brutal injustice is the indiscriminate treatment of hospital-crowds to the younger members of the profession, and to those, the immense majority, who are not of the elect—the poor fellows who are neither professors, chiefs, nor visiting physicians; it is among the lay poor that the professional poor must work. After years of heroic preparation the young graduate finds the very teachers who have taken his money for instruction treating questionless and gratis those who should be his own pay-patients. I have a profound sympathy for the young and unsuccessful physician. He has been outrageously de-

ceived, and is daily being outrageously treated by men of his own guild, to whom he has a natural right to turn for aid in this matter. If he settle in the country, the recklessness of the city-hospital and dispensary government pursues him like a fury. The non-discriminating urban physician receives the country patient without question. It is thought that the distance from which the countryman comes cancels all scruples as to duty to one's colleagues. Medical ethics have at best very narrow geographic limitations.* Only the countryman's local physician knows whether he is able to pay or not—but how often is the matter inquired about by the city brother? Even in private practice the rights of the distant local physician are but little considered; how much less, then, are they considered at the dispensary?

And thus, to summarize, are we cruelly, consciously, persistently committing professional suicide. Every noodle-head knows that that which costs no thought or labor is not appreciated by men, and yet we tumble over each other in our mad rush to do our grand work for nothing. We make the most valuable thing the most despised by our pusillanimous politics, until the poor public learns, instead

* A remedy for the abuse of medical charity is offered by "A Young Subscriber" in a letter to the *Medical Record*. He suggests that the victim of this abuse "the next time and whenever he has need of a consultation, or has a patient to send to a specialist, avoid the man who daily robs him by indiscriminate dispensary-work, and pick out instead one who regards the rights of his fellows. There are men at the heads of dispensary classes throughout the city enjoying large special practices, who boast that they have no care for the financial standing of their dispensary-cases so long as they furnish the required material for clinical purposes, and as for the complaining doctors, they say, 'Let them go and be blanked.' So long as they can do this and keep the support of the general practitioner, they will hold the same views. The moment they find it affecting their pockets they may at least cease to pride themselves upon their dirty treatment of their professional brethren. Let the non-dispensary men look to their rights, and they will soon have less wrongs."—*Boston Med. and Surg. Jour.*, March 21, 1895.

of respect, contempt of us. Where is the hospital for free legal advice? And yet which is the most honored, medicine or the law? Oh! for a breath, nay, a blast, of professional self-respect that would sweep us into unity. Why should we not have some organization, some *esprit de corps*? Even thieves preserve some sort of honor among themselves.

Treatment.—Let us briefly consider the treatment of the disease. What can be done to abate this graceless nuisance? A thousand good hearts and wise minds are racked by this problem. It is almost impossible to find a way out. In fact, we have gotten ourselves so pitifully diseased that we can hardly hope for much else than a life of chronic invalidism, at least so far as this generation is concerned. The disease, if one may so speak, is intensely chronic. One thing is certain, we cannot make men moral by act of Congress. There is not one great general remedy. Everyone of us must take the matter up. The Kingdom of Heaven is within you. The influence of one, of each individual, steadily and patiently opposing the wrong, will, in time, transform the whole. Every one of us has power; each one of us has been a sinner; each one may do little or much toward stemming the evil trend.

And first as to the endowers, whether individual or communal, let us preach incessantly and repetitively the truth that indiscriminate charity is unadulteratedly sinful and cruel. Every penny given without inquiry as to merit is simply hiring people to be sufferers. In a great civilized country, only last year, there was discovered to be a fiendish manufactory of cripples and victims to excite pity and secure alms from the "charitable." Children's eyes were gouged out and every bone in their bodies broken, in order, by their exposure, to stir up the sensibilities of the "kind-hearted," who, by their gifts, kept the manufactory "running on full time." Just as certainly does indiscrim-

inate charity operate now, and here, and everywhere. God's command is infinitely stern, but it is just as infinitely compassionate, that in the sweat of the brow shall we *earn* our bread. The lives of East Indian ryots are quite as happy, fully as comfortable, and far more moral than those of an American mob of train-wrecking strikers; and yet the annual income of the ryot is not one-thirtieth of that of the striker.

Let it be clearly understood that there is to be no chilling of sympathy, no killing of kindness, no less giving, because of this law of life. There is to be all the more—but the sympathy is to be intellectualized, the kindness is to be made effective, and the giving is really to stop the suffering, and not increase it.

We must teach the rich that every endowment of hospitals and dispensaries must be conditioned, narrowly, rigidly conditioned, upon the law that only emergency-cases and the absolutely deserving poor are to be treated in hospitals. When importuned to contribute on hospital-Sundays, or to attend entertainments, charity-balls, etc., etc., let us refuse, and publicly refuse, unless the managers of such hospitals publicly state that rigid exclusion of those able to pay something for medical services is carefully and systematically assured.

The indiscriminateness of the doled-out charity of the hospitals is a natural result of the stupid indiscrimination of endowers. These pour out the money, year after year, and century after century, in reckless disregard of the laws of economics, of the real needs of the community, and of the experiences of other lands. Hospital-farms for epileptics, for the insane, homes for convalescents, homes for the dying, special hospitals of various kinds, especially for the tuberculous—these and more are pitifully wanted, and yet the old ways and the old evils are stupidly increased. If we could only have an omniscient or even half-wise Czar

to direct almsgiving ; if it were only someone's business to instruct people how to give their money. At present it depends either upon haphazard or upon the cunning wiles of some interested person. Rich plebeians, right versed as to oil, or beer, or dry goods, are made presidents or trustees, flattered to the top of their bent with the bauble of office and authority in the things of which they haven't even a spark or a glimpse of knowledge, all in order to wheedle endowments out of them. These go on building wings and additions to old evils, until, as with church-building, the historic momentum results in monstrous aggregations of multiform uselessness or abuse. And every day or two the daily newspaper-reporter gets hold of some scandal, a dying patient refused admission to hospitals, a fisticuff of rival visiting physicians, the "politics" of rival hospitals, etc., etc., and regales his readers with it. All the time the evil grows, until one of these fine days the donkey endower will suddenly awaken to a realization of the fact that he has been imposed upon, and that his ears are several inches longer than they should be. Then he will resign, shut up his pocket-book very tight, and genuine medical charities and properly conducted hospitals will suffer. To arouse the profession to the danger it is incurring by the abuses of medical charity, the danger of a sudden reaction whereby proper medical charity will be stopped, this has been the motive I have had in mind in writings upon this subject during the last six or eight years. It hardly needs the saying that one earnestly desiring the curing of a disease hardly wishes to kill the patient, yet some foolish folk affect to think that those who speak of the disease of the hospitals would destroy all hospitals as incurably diseased. The physician, even of the specialty Hospitalism, hardly desires to become a Reign-of-Terror guillotinish. Nothing is more divinely beautiful than a noble hospital, rightly managed, and illustrating at once the science, the art, and the benevolence of

medicine. But, according to the old maxim, *corruptio optimi pessima*, and a hospital endowed by wealthy hypocrites, managed by medical advertisers, and filled by social parasites, is as bad as the other is good.

In the hospitals and dispensaries of England and Wales, 2,855,644 patients were treated in 1878, while in 1893 the number was almost four millions (3,985,263), an increase of noteworthy proportions. At the same time the number of physicians has, of course, also increased. In 1882 there was one medical man to 1703 people, whilst in 1893 there was one to every 1427—that is, each medical man has 250 less people in his *clientèle*. If this is true in England, where medical education and medical charity have preserved at least the tradition of sanity, what must it be in the United States? In order not to be charged with invidiousness, let us take the experience of a foreign institution. I assure you, however, illustrations could be had very much nearer home. St. Thomas' Hospital, of London, has an annual income of \$285,000, and appeals urgently for more money. A writer in the *Medical Press and Circular* thus further describes the condition of this institution:

“ That Hospital was chartered by Edward VI, and splendidly endowed with landed estate, and up to the year 1862 it enjoyed a high reputation, and, so far as I know, did its work efficiently. In that year its site at London Bridge was invaded by the South-eastern Railway, and the Hospital received, I think, \$2,300,000 as compensation. That to the common mind would seem to be a tidy sum with which to build a new hospital, especially as the ground which it occupies was secured on the cheapest terms, having just been reclaimed by the Thames Embankment, but when architects and builders got, as they did, a firm hold of the job, it turned out to be quite insufficient to realize their aspirations. They succeeded in producing not only a heavy deficit, but a veritable white elephant—a building about twice the necessary size, containing bed-accommodation one-third greater

than could be maintained by the income of the institution, and constructed in every detail in the most expensive manner. It was stated by the Royal Prince at this meeting that five of the wards are now empty, there being no money to keep them full, but it was not mentioned by his Royal Highness that several other wards are filled by paying patients, most of whom are in no sense deserving of charitable relief, and ought to be in their own houses, nursed and treated at their own expense, and not at the expense of the charitable.

"It would not be just to blame the present administrators of the Hospital for the mad extravagance of their predecessors of thirty years ago, but for the financial administration of the Hospital at the present day they are responsible, and I may ask a question or two on that. I find from *Burdett's Annual* that every bed maintained costs \$512.37 per annum, and every patient admitted represents an outlay of \$38.83, the highest rate among the twenty-three London general hospitals save four. This does not mean that the sick patient costs directly any such sum, for, as far as I can make out from the figures, his maintenance, nursing, and treatment do not consume more than one-third of the amount, the remainder representing outlay in salaries to officials, pensions, and other matters which are only of indirect benefit, if at all, to the sick patient. When I find that the most efficient provincial, Scotch, and Irish hospitals can and do keep, nurse, and treat a similar patient all told for just half the money, I am moved to ask what claim has St. Thomas' to public sympathy? Not all the royal princes, dukes, archbishops, and millionaires in existence will persuade me that a hospital which builds beyond its means, spends its resources like water, and refuses to retrench, deserves to be subsidized with \$500,000 or any other sum."

As to the public, every one is a teacher, and may make his voice heard against indiscriminateness. I plainly tell my patients, and the occasion arises nearly every day, that they cannot get as good medical service at the free dispensary as at the private office, and that private treat-

ment is far cheaper than the treatment for which nothing is paid. I think it our duty to stigmatize the hospitals and give them a bad name. We can hardly exaggerate the truth in this respect. Let us laugh to scorn the clap-trap delusion of the masses that at the dispensary they will be treated by the great Professor Bigwig, and that therefore they will be better treated than by yesterday's graduate, Dr. Nobody. We, of course, know the silliness of such an illusion; we know that often at the Hospital Bigwig gets all the honor and young Nobody does all the work. Ten to one, with his care and desire to establish a reputation, young Nobody would do the better work of the two, even if Bigwig had the case himself. Then there is the wasted time of the patient, the crowds, the shocking surroundings, the shame of being a pauper! Let us use the blunt, brutal word, and drive it into their heads—*hospitals and dispensaries are for paupers!* It will hurt a little, but it will do good. Every older physician has some younger friend and colleague who needs the poor patients and their poor fees. Why not do the patients and the friend a real service with one word of advice?

As to the profession, if one has anything to do with a hospital, one can do not a little in the interest of discrimination. A trained mind can learn to detect the old clothes put on for the visit, the odor of whisky, the concealment of ability to pay something. There should be no mincing of words with such folk. Every patient caught shamming should be half-insulted and unceremoniously turned out. Let them go to "other places where they will be welcomed;" the "other places" will thereby secure for themselves an evil name in time, which will prove a poor investment.

There is one half-evil that is condemned by some and practiced by many, but it has the excuse that it is somewhat better than the hospital wholesale business.

The drug-store doctor is not, perhaps, the best type of professional man, but he is not so bad as Professor Bigwig. By the drug-store doctor I do not mean the druggist who is not an M.D., but who in fact prescribes much as if he were. That problem is fast settling itself by the commercial medical college selling diplomas to the druggist. What is meant is the genuine doctor who also keeps a drug-store, but who charges—well, nothing for advice and everything for filling the prescription! Such a product of our *fin de siècle* medical civilization is in fact a direct reaction and result of indiscriminate medical charity. And since the doctor gets something, however roundabout, for his work, I am not inclined to scold him much. When hospitalism is whipped out of the field it will be time enough for all good men to turn in and run out the drug-store doctor.

Still another form the reaction has taken is that illustrated by the physician who, while pursuing essentially the same plan as the drug-store doctor, carries it out by the *vice versa* method. I mean the charging for advice but giving the medicine gratis. This is certainly a step, nay, two steps, in advance, and hits two heads well-deserved and good-resounding whacks with a single shillalah. Who does this at once "gets even" with the soulless hospital and with the nostrum-selling, prescribing druggist, both having tough skulls that need many downright doughty thwacks! Perhaps the same club may in time split wide open another cranium, that of the patent-medicine man. The remarkable progress in the arts of modern pharmacology makes possible, and many other reasons make justifiable, the dispensing of one's own medicines.

In England medical clubs are already deemed unmitigated nuisances and deplorable grievances. With us they have not yet become so, but we are fast entering the same smooth *descensus Averni*. But it seems to me even this

phase of the wholesale medical business is preferable to hospitalism—a road, that if not to Avernus, trends toward a lake into which certain tormented swine did once rush somewhat hastily, with much relief to their mental disease.

One finally asks, Why should each physician not have his own private dispensary? Behold his empty office and his unoccupied time! Why should he deimpersonalize his charitable work and give himself namelessly to an institution—a sort of a corporation which proverbially has neither a body to be abused nor a soul to be saved? Better, it seems to me, and far better, would it be to do the service and get the gratitude one's self. In such cases there is a real and a scientific service on the physician's part, and a real and not a sham gratitude on the part of the patient. Private individuals should go into private competition with the hospitals. The hospitals can be whipped out every time. And when one corrects the botch-work of the hospitals, the time and the health of the patient have been so patently spared that the thank-offering of an unexpected and shyly given fee is much larger than one would have thought of receiving from a "charity-case." One may perhaps hear the sneer that it would be unprofessional for a hungry young doctor to solicit gratis-cases at his private office—and ten-to-one the sneer would come from one who hangs his name on big sign-boards from his dispensary doors, and advertises himself or his hospital in cheap newspapers and on theater bulletin-boards. I would be far from justifying advertising ways on the part of the younger man, but decidedly when the advertisement of the hospital means the advertisement of the men running the hospital, then I excuse the young non-hospital advertiser first and quickest. When Bigwig quits the trickery, young Nobody will soon do so also.

I would like to add a suggestion that seems never to have occurred, either to our profession or to its most excellent coworking sister, that of the trained nurse. Thousands of women have heroically and successfully struggled under the greatest difficulties to secure their special training and ability. Thousands more are preparing, but already the profession is overcrowded. Why should they not take up the hospital-business as a work for which every consideration of natural and acquired fitness shows them adapted? The hospital business is a sort of a special boarding-house business. I see no reason why in America we should drift into the huge barracks-hospital system with droves of daily thousands. The individualization of cases is the first requisite of clinical wisdom, and the individualization of hospitals is another professional desideratum. There might be hundreds of single-house hospitals or homes for the sick, adapted to different diseases, and to all purses, in all of our cities, in which nurses should be the responsible owners or controllers, and to which any physician might upon regular business arrangements send his patients, and relieve himself of all except the medical responsibilities, the nurse as now carrying out his orders. There is something belittling—I will not use a harsher word—in the custom of physicians going into the boarding-house business—euphemistically called the private hospital or the private sanitarium. The physician should not be interested in or bothered by the chambermaid's work, the price of beef, or the rental of rooms. This is all alien to his proper work, not seldom inimical to it, and even leading sometimes to scandalous conditions. But placed in the hands of a woman specially educated for exactly that sort of thing, it would at once elevate the dignity of her own nurse's profession, lessen the shame of the impertinent and bulimic hospital, and regulate and systematize the physicians' proper labor

But when all has been said and done the hospital abuse will continue unless professional sentiment is aroused. Trustees, professional philanthropists, and the public will gladly continue to eat the oyster of medical service, and leave the shells to our asinarian rivalries. Possibly there will be no great and thorough cure of the evil so long as we remain a divided profession, so long as local medical societies never touch professional abuses and wrongs, so long as censors have no moral sense and are never incensed—surely not so long as the American Medical Association numbers as members but one in a hundred American medical men. As certainly also there will be no reform while like a lot of unspanked school-boys the members of that Association hanker after and quarrel over the right to advertise nostrums and to associate with quacks, and while the cynical wrap themselves in the cloak of respectability, hold themselves aloof, and grin sardonically from the safe retreats of success. The two immediate and demanded conditions of all reform are:—

1. That medical men shall have a large share in the government of hospitals, thus making them responsible for abuses and rendering it possible to stop this old monkey trick of getting chestnuts by our stupid professional paws thrust into the fire.

2. The principle of the Charity-organization Society must be made a part of all hospital management. It would be well if a genuine copartnership could be realized between the local Charity-organization Society and every hospital. At least, there must be at every hospital an officer whose sole duty it shall be to discriminate between the worthy and unworthy—and he must be made to discriminate, too.

POSTSCRIPT.—From the *Lancet* of June 8, 1895, we learn that during the year 1894 there were treated gratuitously in the London hospitals:—

GENERAL HOSPITALS :

In-patients,	52,080
In Convalescent Homes,	5,585
Accidents and Emergencies,	264,379
Out-patients, number of visits,	1,684,448

SPECIAL HOSPITALS :

In-patients,	24,963
In Convalescent Homes,	2,526
Accidents and Emergencies,	25,660
Out-patients (visits),	1,205,688

COTTAGE HOSPITALS AND CONVALESCENT HOMES :

In-patients,	24,963
In Convalescent Homes,	39
Accidents and Emergencies,	244
Out-patients (visits),	13,858

DISPENSARIES :

Out-patients,	1,204,045
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Totals,	4,508,478
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The *Lancet*, in pitifully begging for more funds to carry on this tremendous labor, notes that whereas in 1890 the total number of out-patient visits was 2,429,219, in 1894 the number has risen to the perfectly absurd figures of 4,108,039. What more convincing argument could be adduced for lessening the amount of subscriptions, and thus, perhaps, stopping this riotous debauchery of both profession and public?

THE ETIOLOGY, DIAGNOSIS, AND TREATMENT OF THE PREVALENT EPIDEMIC OF QUACKERY.*

You have all heard of the doctor who would never eat roast duck because the impolite animal had always been so personally insulting to him in its remarks. Doubtless you may wonder if I am not also a bit impertinent in choosing the subject of quackery as a theme of talk before physicians regularly educated and presumably despising irregularity and sectarian medicine with just indignation. I assure you it is not because I suspect you of infidelity—at least of a very pronounced type. I simply wish to give you a hint of the difficulties and temptations you will encounter when, as physicians loyal to science and modest self-respect—no science, you know, without unselfishness and modesty—you come in sharp contact with the evils of modern sham medicine. The temptation to compromise will then come with subtle but decided force. I said I would not suspect you of positive infidelity, but as science always consists in finer discriminations and the recognitions of small differences that escape ordinary observation, so, with civilization, is coming the influx of a thousand grades of deception and fraud.

The question is always suggested: How much of a quack is he? You may have no doubt about Sharp & Co.'s Safe Cure, the seventh daughter of the seventh daughter,

* An address delivered by invitation of the Faculty of the Medical Department of the Buffalo University, before the Graduating Class, May 3, 1892.—From *The Medical News*, May 7, 1892.

or the pictured old man leering at you from the theatrical bulletin boards with Mephisto grin as he lovingly clasps to his arms a bottle of sarsaparilla. But how is it with the very great and the very regular Dr. Supersuspect, who writes puffs of secret proprietary preparations, or who praises one especial brand of wine—after receiving a fine case of “samples”—as a sure cure for influenza. How about Dr. Slydog, who fills his reception-rooms with hospital dummies, or who makes his patients come many times for the relief of a simple ailment, that if cured at once would result in too small a bill—or, who tells them all their symptoms are very serious, but that he has caught the disease just in time? Are these gentlemen quacks?

Dear old John Phœnix complained that our use of adjectives was entirely too vague. If a man were called good, he wanted to know just exactly how good you thought him. If “Sally who lives in our alley” should be thought beautiful, is that the only adjective that could be applied to Helen of Troy? John, therefore, proposed to prefix a number to each adjective that should indicate just the degree of perfection desired. If, in your calm and dispassionate opinion, Sally is as beautiful as Helen, then you would call her 100 beautiful, though perhaps your friends might think her only 25 beautiful. If we apply the principle to quacks, we have excellent results that will enable us to ticket them with a fair degree of accuracy. For instance, take the street-corner man who sells Wizard Oil with negro-minstrel accompaniment and four white stallions; he gathers a lot of money from the crowd and then drives off at a gallop; he is evidently a 100 quack, pure and simple. Take Keeley next: in order not to exaggerate, let us put him at 98 or 99. Then the Hahnemannian Knights, according to the degree of their medical education and the weakness of their potentizations, may be ranged from 95 to 97. The metaphysical Healers,

being sincere but ignorant, should find their level at 80 or 70 perhaps. Where must we put the "vivopaths," the "physio-medicals," the "bio-chemicals," the "manupaths," and all the motley crowd, unnameable, indescribable? Where should we grade the cunning fellows that are clinging desperately to the coat-tails of respectability and medicine, but who are neither respectable nor medical, except in externals? Surely not under 50. Where shall be placed the fellows who receive "presents" from drug-stores and instrument-makers, who write therapeutic articles on drugs that they know nothing about, or run dispensaries as feeders for the private office? Can they come nearer than 25? Then the "brilliant-operation men" whom the newspaper reporters so easily fool, the college professors and hangers-on, who in blowing the collegiate horn pianissimo, opportunely emphasize the note of their own private and personal trombone fortissimo! In all such cases the individual conscience must decide.

Quackery may be likened to a poor artificial eye—everybody else can see through it except the patient. Strange beyond all strangeness is the gullibility of the patient,—his devotion to his duper. *Populus vult decipi*—which being modernized means, the mob loves humbug.

But however disgusting, the fact is explainable. The deep-seated grudge and suspicion of the populace for scientific medicine and the secret love with which it turns toward its magic-mongering humbuggers is evolutionally but a survival of the time when medicine was nothing but magic,—an atavistic return to primitive modes of thought and therapeutic superstition. And it is also profoundly pathetic,—an appallingly serious fact. The scientific student of sociology watches the inrooting of institutional weeds and fruitless brush that the future civilization must grub out and burn with costly labor and sacrifice. The

student of heredity and psychology sees the hardening of modes of thought and habit that must bring only pain, or misapplied or useless function. The sincere physician sees disease permeating unborn babes, and scientific progress crippled and unutilized by reason of popular perversity.

But a further explanation of the peculiar and rejuvenated power of modern medical charlatanism consists in the fact that it is not only a survival of half-extinguished medieval fires, flaming up with temporary and dying brilliancy, it is also a "combine" with modern civilized money-making and unscrupulous politics. It is not only an atavism, it is also an avatarism,—present-day cupidity is engrafting itself upon ancient superstition,—a marriage of medieval magic mummary and money-making, so that the sly cunning of the politician uses the stupid monkey's paw to pull the chestnuts of profit out of the fire of human suffering.

Nowhere else is this fact so certainly seen as in the history and actual outworkings of that consummate example of civilized quackery called Homeopathy. An hour's study of Hahnemann's works would convince any convincing person that this sorry specimen of nineteenth-century medievalism is a disgrace to civilization; and yet it is fashionable. Laughed out of Europe, it has sought and found a home among Americans, infinitely receptive of every form of opera bouffe whimsicality and rampant rascality. If its lay adherents had the faintest conception of the hideous absurdities on which it is built, and the trickery by which it lives, they would be sickened with disgust. The distinctive principles that make it differ from scientific medicine are the following delectable Hahnemannian hocus-pocuses:—

1. The cause of human disease is either the "miasm" of sycosis, of syphilis, or, in overwhelming proportion, the

itch.* With marvelous inconsistency, however, the origin of all disease is held to be beyond the discovery of the human mind, supernatural, hyperphysical, a disturbance of our "dynamis" or soul life. Diagnosis of disease is, therefore, impossible, and thus the very first requisite of cure, the knowledge of the cause of morbid conditions, is declared incomprehensible and scorned.

2. The more you weaken or dilute a drug, the stronger it becomes. Hahnemann's own words are: "A homeopathic dose is augmented by increasing the quantity of fluid in which the medicine is dissolved." Oliver Wendell Holmes, who has tried to drown this pestiferous sect with logic and laughter for a quarter of a century, calculates the oceans of water in which a grain of medicine must be dissolved in order to "potentize" it to suit Hahnemann. Mathematically, the thirtieth "potentization" would require a body of water equal in amount to 480,769 worlds the size of our own in which to dilute a physiologic dose of medicine. Hahnemann himself could not get it "thin enough," and so finally gave all medicine by the nose, by "olfaction," or smelling. And yet medicine so thin as this has effects that only a madman would dream of ascribing

* It is sometimes said that no man could have been so asinine as to ascribe to the itch such profound powers, but using Hahnemann's own words, as quoted by that most excellent writer, Prof. Nathan Jacobson, of Syracuse (*Journal of the American Medical Association*, March 5, 1890), psora is the only real fundamental cause and source of all the other countless forms of disease figuring as peculiar and definite diseases in books on pathology under the names of nervous debility, hysteria, hypochondriasis, mania, melancholy, idiocy, madness, epilepsy and convulsions of all kinds, softening of the bones (rachitis), scoliosis and kyphosis, caries of bone, cancer, varices, pseudoplasms, gout, hemorrhoids, icterus and cyanosis, dropsy, amenorrhea, hemorrhages from the stomach, nose, lungs, bladder, or uterus, asthma and suppuration of the lungs, impotency and sterility, sick headache (hemicrania), deafness, cataract and glaucoma, renal calculus, paralysis, deficiency of the special senses, and pains of every variety.

to it. A purely inert powder like lycopodium, administered in unimaginably minute doses, will, according to Hahnemann, produce 1608 distinct symptoms, covering a period of fifty days. One-millionth of a millionth of a millionth of a grain of common table-salt produced 1349 symptoms, including headache, vomiting, cardiac and lung troubles, disturbance of sight, hearing, and so on.

The method of potentization is by shaking. Hahnemann would not advise above two shakings for fear of making the dose too strong. The great apostle of homeopathy, Lutze, in an address that has reached at least forty-two editions, says that an old man was cured of persistent vomiting by means of a glass of water that Lutze had magnetized by simply holding it in his right hand.*

3. To cure a disease, give a medicine that in a well person would cause the disease, or something as near to it as possible,—that is the holy nonsense of *similia similibus curantur*. By a grain of a drug diluted in millions of oceans of water, you are supposed to substitute a drug-disease for the natural disease; and the “instinctive vital force” will turn and “go for” the natural disease, because the vital force has, as it were, been made mad and spurred on by the drug disease.†

* He concludes “that if pure water can be so enriched in medicinal virtue by simple contact with the hand as to cure a disease of years’ duration, how much more must this power grow if a properly diluted drug, whose peculiar powers experience and provings have taught, be subjected to constant shakings in the hand until it becomes enormously efficient.” Further, he says: “The poisonous properties are removed from a drug through its dilution, while its special peculiarities, so to speak, its soul, remains, and by rubbing and shaking becomes vivified and strengthened by human magnetism.”

† Hahnemann’s own words again: “By administering a medicinal potency exactly in accordance with the similitude of symptoms, a somewhat stronger, similar artificial morbid affection is implanted upon the vital power, deranged by a natural disease; this artificial affection is substituted, as it were, for the weaker similar natural disease (morbid excitation), against which the instinct-

It is worthy of this lunatic medicine that, reeking with medievalism, it should claim to be the "new school," and call "old school" that system which, by instruments of precision, bacteriology, experimental research, and a hundred scientific methods of which no homeopathist ever originally dreamed, is endeavoring to cure and prevent disease. It is worthy of this new school that it should pretend to practice Hahnemannism, while secretly using any medicinal agents and in physiologic doses. Made according to Hahnemann's theories, made as it is to-day pretended they are made, one could harmlessly eat a stomachful of their sugar pellets, supposed to be deadliest poison.

Not an instrument of precision, not a bacillus, not a ptomain or leucomain, not a single measure of genuine therapeutics or experimental research, not a single discovery of the thousands that make up the body of modern scientific medical truth and power, not one, not one was ever discovered by a homeopath. Their greatest discovery I know of is that the human iris, by its tints and fleckings and colors, denotes the parts and the particular ailments or wounds of the patient's body diseased or injured.* I have the recent catalogue of a homeopathic drug store in New

ive vital force, now only excited to stronger effort by the drug affection, needs only to direct its increased energy; but, owing to its brief duration, it will soon be overcome by the vital force, which, liberated first from the substituted artificial (drug) affection, now again finds itself enabled to continue the life of the organism in health." The wondrous clearness, logic, and correspondence with the facts of pathology herein displayed make the statement a fitting cornerstone for a lot of lunatics and sharpers to build a system of philosophy and medicine upon!

* *Die Iris, nach den neuen Entdeckungen des Dr. Ignas von Peczely*; also, *Die Augendiagnose des Dr. Ignas von Peczely*, etc.; von Emil Schlegel, Tübingen, 1887. Spots in parts of the iris, according to location, mean wounds of the ear, the shin, a syphilitic tumor, lung-disease, prolapse of the uterus, etc., etc.

York, in which, to-day, among thousands of filthy things, or rather names of things, offered for sale are the following "morbific products, nosodes," etc., offered in high potencies:

"Lice insects," either of the three varieties: "serpents," "tarantulas," and "crickets." You can buy bottled sunlight, nay, the sun himself; or you have the choice of the blue rays, the yellow rays, bottled galvanism, or faradic electricity, etc. "Snow" and "ice," or "moonlight" or the "east wind," are at your command for ten cents a "graft;" it is not the germs or material particles, but the disease itself—Bright's, catarrh—any that you will; but you can also have the "pus from a carbuncle," from "Pott's disease," etc. You can buy "Brahma" himself, it seems; or, if you are sad, you can, for ten cents, have "tears of a young girl in great grief and suffering;" the "salt of the brain secreted from a gentleman's scalp with the perspiration;" a silk handkerchief eaten by a cow and taken from the stomach in a hard ball; during the three years she never had a calf." One of the most interesting and suggestive items of the catalogue is simply entitled "Omnia."

If one quotes Hahnemann or the elder homeopathsists, the Hahnemannians say "this is misrepresentation," and that "in modern progress we have advanced beyond all that." And if one quotes the modern homeopathsists more versed in the art of mystification, but at heart equally absurd, it is said these do not represent true homeopathy. I have quoted both ancient and modern somewhat extensively, not because I have any special grudge against this School—far from it—but because its adherents are the most numerous and coherent body of sectarians, and because they have succeeded, in this quack-ridden land, in befuddling so many people, sensible in other matters. In a simple commercial sense, I ask, would it pay to publish catalogues and offer for sale combined middle-age filth and modern rascality, if there were not buyers?

To-day there are in 53 "institutes" some 8000 pitiable victims of sin, forming four times a day in 53 lines ("jab-time") to receive from renegade medical graduates (hired servants of an ignorant charlatan trading upon the name of medicine) the hypodermatic injection of a secret substance. They are guaranteed a permanent cure of their disease, and yet a large proportion have gone through the cure more than once, and a large proportion of those never returning a second time, relapse. Despite the medical, physiologic, and literary barbarism of the Keeley pamphlets, despite the indirect fiendish cruelties of the system (to friends of patients who ruin themselves to raise the money—those who can't pay the \$100 "may," as at least one of the superintendents said, "go to hell!")—despite this and the secrecy, there are men, otherwise sharp-witted and intelligent, who are crazy in advocacy of this pernicious filth. The whole affair illustrates well the popular distrust in scientific medicine, and the popular belief in a magical short-cut to health by therapeutic miracle. Young Men's Christian Associations, which would not think of listening to a scientific lecture on the results and cure of chronic alcoholism, open their doors to this monstrous guller, and the Jay Gould of the preaching business, from a supposedly Christian pulpit, calls for God's benediction on the most unchristian of deviltries. With a hound's chorus of a thousand newspapers, the *Chicago Tribune* leads in this infamous exploitation of the poor drunkard. So Perkins's tractors sprang into popularity, and so, after the speedy burial of this delusion, others will periodically spring up in obedience to popular superstition, prodded and nursed by cunning Mephistophelianism.

The danger of medical lunacy overtaking the people is again illustrated by the vogue of the creed of the sorry folk termed metaphysical or divine healers, Christian Scientists, Faith or Mind Curers. Would you think it possible that

people right here in the United States, among us to-day, could believe that "it is impossible that a boil is inflamed or painful," and that inflammation, hemorrhage, and decomposition are but thoughts, beliefs,* and that carcinoma, diphtheria, typhoid fever, what you will, can be cured by prayer or thinking hard at it? According to Dr. Nichols,† there are within the limits of only one of these curious sects about thirty organized churches, and also 120 societies that maintain regular services. Twenty-three institutes, "scientific" and "metaphysical," are advertised in one periodical. The number of practitioners "regularly graduated" reaches thousands.

Or, take another national disgrace, the patent-medicine shame. Even semi-barbarous countries have forbidden the entrance within their limits of these vile concoctions, devised to empty the pockets of the poor of money, while filling their bodies with poison. Any chemical analyst would tell you these "non-alcoholic bitters" are made up of from 25 to 50 per cent. of the vilest alcohol. Thousands of poor babes have been killed by soothing syrups—of course, containing no opium or other hypnotic—and so on, so on, to the end of the list!

What an egregious farce, that people should buy a cure-all containing they do not and cannot know what; compounded they do not know by whom—certainly not, of course, by a physician—vouched for by no one—an evident bit of hoodooism to get money—a shotgun prescription fired at a disease in the abstract—an unknown remedy for an unknown disease from an unknown hand! And yet the millions upon millions of dollars invested in these nostrums, and thereby annually filched from the ignorance and want of the poorest and neediest, should arouse even the most

* "Science of Health," pp. 188, 231.

† *Science*, January 22, 1892.

corrupt of legislators to put a stop to it all. The superlative impudence of the villainous syndicates is degrading and wrecking the once noble profession of pharmacy, and turning the disgust of the reader and traveler into nausea by the pollution of every newspaper and of every landscape with sickening advertisements.

And now, why do Keeleyism, the patent-medicine and nostrum sham, the homeopathic disgrace, and a thousand such things exist among us? They are, of course, a vital loss and a vital injury to the community, working a pollution of body upon an idiocy of intellect, by a Boss-Tweedism of ethics. Why is our country the refuge and asylum of the survival superstitions, the delirious nonsense, and diabolical financial schemes that Europe has kicked out in wrathful disgust? Simply this: the newspapers, journals, and magazines dare not tell the truth or be the means of telling the truth. Every magazine or serial depends for existence upon two sources of revenue: its subscribers and its advertisers. Let a journal or paper publish an article exposing the infamy, and "stop my subscription" would come from a few dozen people whose pet fad is that they are being persecuted, and that they, who have never studied such things a minute, know the truth about physiology and disease that thousands of scientific men have been deceived in finding. Hence no editor dare admit an article showing up the shame and wrong of these things. Physicians and other scientific men have nothing to sell, nothing to advertise; but all quacks, nostrum venders, and patent-medicine men have something to sell, and their advertisements form a tremendous source of revenue to every paper in the land. Let any journal reveal to its readers their humbuggery, and at once it is ruined.

But advertisements maligning and misrepresenting their opponents are put into the reading columns as reading notices, neither editor nor publisher daring to disobey the

orders of the syndicates. A well-known illustration is the thousand-journal denunciation and contumely, for the past year or two, of the druggists who dare "substitute" for the quack medicine called for similar and equally good preparations at one-half the price of the more advertised cure-all.

Other examples of journalistic perversity might be cited; *e. g.*, *Harper's Magazine* a year or two ago published an article by a professional humorist, claiming that homeopathy had saved modern medicine from the medieval barbarism of filthy medication and beastly therapeutics. Would it insert an article showing that the reverse is the truth, and that by the malicious and egregious blunder it had grossly insulted every physician and scientist, civilization, and truth itself?

Would the newspapers of the country, headed by the *North American Review*, give one-hundredth of the free advertising to a reputable or scientific institution for the treatment of chronic alcoholism that they have given Keeley's humbuggery, and out of which that shrewd advertiser is making millions of dollars?

The etiology and pathology of carcinoma is certainly a deep scientific question, and yet a dashing magazine editor, who had never studied it for a minute, indorses the cure of a quack, Mattei, who had likewise not a scrap of medical knowledge, and the people are thus gulled into spending hundreds of thousands of dollars. Any medical student could have exposed the fallacy, knowing how easily tumors are diagnosticated as carcinomata, and thus often "cured." Neither Mr. Stead nor his Italian Count care for science. They have a short cut to scientific knowledge no physician could have even found out by study or pathologic investigation!

A month or two ago, a bill, "a very moderate one," and one that "the three leading and influential schools of

medicine" had recommended to the Legislature of Ohio, to control the practice of medicine, was shouted down in guffaws of derision by the barbaric civilized legislators of that State at the command of the lobby controlled by the so-called physio-medicals, the druggist, patent-medicine men, and the newspapers. After this delectable piece of diabolism, this same Fejee Island Legislature—of Ohio—voted \$5000 to experiment with the Keeley humbug, each legislator to furnish one Keeley patient. Doubtless with such men charity is to begin at home, and the patient will not be hard to find!

Charley Lamb said that the only way he could relieve his feelings when he had heard a Gregorian chant, was to lie down on the floor, flat on his belly, and howl like a Dervish.

It is useless and tiresome to multiply examples. To the honest physician the diagnosis is easy, but to the physician himself infected with the disease and in the incubation period, the disorder is unrecognizable. He will contend most vehemently that the patient is in blooming health. All who wish to know the facts can easily learn them. Evidence of the fallacy of the popular distrust may be seen by the words of one who is certainly a competent and unprejudiced observer—the present highly honored president of Harvard University.

"It is not more than a hundred years ago that medicine claimed to have been a liberal calling, an intellectual pursuit, and even to-day its position as such is very inadequately recognized by the mass of educated men. Now, I venture to say that, as medical education is now given in the best schools, no profession has a better right to claim the title of an educated, intellectual calling, and no men have a better right to demand recognition as intellectual men, as men of trained reasoning faculties, than the physicians themselves. I see, in my position at the head of the University, which includes the department of

liberal arts and several professional departments, that the educated community does not recognize this. And I exhort you, gentlemen, in all your various fields of influence to do your utmost to establish this just claim of the medical profession to the position of an intellectual calling, and to establish the claim of this great body as a body of highly trained men who use to the best advantage for the community the reasoning faculty, the scientific power of the human mind."

A quack is a man more interested in himself than in the healing art; caring more for his patent than for his patient; more desirous of making dollars than of curing disease. A physician is one whose first thought is to cure his patient. This is the sharp dividing line that makes the whole matter clear.

There are those that say that medicine is a business, that the cure of diseased people and the obviation of disease is a calling like any other; that the one who cures best will do the best business—*i. e.*, get the most patients. There is but one single comment to make to that; it is a lie, and the man who says it knows he is a liar. I beg of you, if you are entering the medical profession with such ideas in your heads and such intentions in your hearts—I beg of you, leave the profession to-day. You will be poor physicians, you will die ashamed of yourselves, you will disgrace a noble calling, and you will hinder civilized progress. I assure you this universe is not put up that way! You may make some money, perhaps, but the same deviltry applied in politics or bucket shops will get you much more of the stuff you seek. We have a wretched superabundance of such fellows now to watch. A large share of the energy of good men is already used up in neutralizing their malice and thwarting their cunning. You will do far better by running for alderman, dealing in green goods, or in anything except in the health and confidence of afflicted human beings. That is a work fitting only to

those who recognize other ideals and purposes than selfishness and money getting. The acceptance by you of your diplomas this day pledges and consecrates you to a mission among your fellow-men that is truly holy. How far you are to be above trade is clearly shown by the fact that the chemist—as near a physician as he is—can without dishonor patent drugs and reap exclusive pecuniary gain from the learning and ingenuity of his brain—but you may not do this. In a close analysis the work of the chemist and scientist is due humanity as much as is yours; every device and improvement of civilization withheld from public use or sold dearly is trading in people's lives, is a sin against the race—but only you, yours alone of all the callings, must realize the fact in every-day life. It is a glorious honor to belong to the profession of which that can be said. But the honor only comes to them that are willing to be unknown as honored, who find the reward in doing the work, and in the secret satisfaction of a silent, happy, and peaceful conscience.

But with the professional honor and beatitude coexists the professional duty. There is the greatest danger that the men who believe that medicine is a business will have their way, and sink professional standing to the level of politics and trade. Will you join them or will you oppose them? The whole of your life will be the answer, and this answer will largely consist in your attitude to quackery. Dr. H. C. Wood says that as few or no homeopaths to-day believe or practice the Hahnemannian clap-trap, they have, *ipso facto*, suicided, become in a sectarian sense non-existent, and that on our part *we* may ignore the fictitious distinction and fraternize with them. The President of the Philadelphia County Medical Society advises letting them into our medical societies. A prominent weekly medical journal of New York smiles very graciously at the sectarian, and a good friend of mine, an editor of a high-standard med-

ical journal, tells me that in his city consultations with a sectarian are very common, and go unrebutted by physicians otherwise in good standing.

In other words, after centuries of struggle and with victory in our hands—throw it away in a fit of avariciousness, cowardice, and weariness. The gentlemen quoted doubtless mean well, but the advice is unconsciously traitorous to humanity and to the medical profession. If the advice be followed, we shall fall back again into what the printers call pi, and out of this general debasement moral physicians, as individuals, will again have to raise themselves above the re-commercialized mass, and with century-long struggle, reform again a new guild, with precisely the same ideals and aims as that we poltroons had destroyed.

It cannot escape the observation of anyone who wishes to see facts as they are, that the great mass of homeopaths, by pure necessity, have in practice entirely abandoned the whole crazy nonsense of Hahnemannian mumbo-jumbo, and cling only to the name for purely commercial reasons. The great homeopathist, Guernsey, he probably who supplied "Dr." Swan with his sample or graft of "catarrhus nasi," says that there is in New York City, to-day, no exclusive homeopathic practitioner. Any fool knows that no disease can be influenced or cured by the medieval drivel of potentizations, shakings, smellings, similias, etc. But a lot of silly women have got it into their heads that this is a "nice" and a "new" school, and these mountebanks, while giving common drugs in physiologic doses, are willing to sail under false colors for the sake of the practice it brings. It is a sickening fact, but fact it is.

What is the treatment of this veritable and terrible contagious disease—quackery? How shall you meet it? What are you going to do about it? Compromise? The suggestion recalls Hugo's famous monosyllabic fighter at Waterloo.

Instead of the ninety thousand surrendering to ten thousand, suppose the ninety thousand learn a lesson.

Combination is the order of the day in the world of trade. What is thus done for selfish reasons may be done for unselfish ones. The patent-medicine men have got every druggist and every newspaper in America in their determined grip. The homeopathsists meet in National and International conventions, and devote their entire energies and time to schemes for getting State and Governmental money and aid, and for grasping every point of pecuniary and social advantage. In our lofty scorn of such low cunning, and in our intense preoccupation with disease and its cure, we never raise a finger toward meeting such attack, never pass a resolution to set Legislatures right, never try to instruct the public in its medical duties and self-interest. If as a profession we did but devote a tenth of our collective energy and intellect to these things, quackery would disappear. The medical profession is shut within itself. It has no means or machinery for reaching the public ear. The few thousand quacks occupy the field; the public hears from them always and emphatically.

Realize the condition of the farmer and workman, uneducated, indiscriminating. These are the bulk of our people. With almanacs and circulars and million-fold devices, the advertisements, fictitious certificates, and false promises of the nostrum-traders and the quacks reach his mind and feed it with subtle poison and plausible falsehood. The family physician is squeezed aside, and his testimony against these frauds, if he have the frankness to denounce them, is credited to his jealousy. The medical profession has scorned to devise machinery to reach these people and to open their eyes to the humbuggery. By the great mass of the people the medical profession is looked upon with contempt or ill-will, its members to be called in dire necessity, its bills paid grudgingly. The bottles of the cure-all

meet the physician's eye in every household. Every State and National medical congress or organization should have a literary bureau, the local physician as the local agent, to instruct the people in physiologic, sanitary, and medical duties, and to neutralize the pernicious influences at work. It should not be held beneath our dignity to make a popular but honest and instructive medical almanac for popular distribution.

The American Medical Association and the Congress of American Physicians and Surgeons, every State and every medical society, should pronounce as bodies upon the great questions affecting the health of the public. Legislators think we do not care, that we have no power. The quacks have their ears and fill them. There are a hundred great public duties we are leaving undone when, if we but spoke as a profession, medical and sanitary progress would sweep on to certain victory. It is, let us hope, only a question of time. In the riot and intoxication of the rich conquest of American advantage, Democracy thinks that every outrageous form of delusional crankery must have its swing and chance to rule or ruin. But that day is fast passing away. We must now settle down to the hard work of governing and civilizing. When the Prince Hal of Democracy becomes the King of Civilization he must henceforth scorn the Falstaffs of quackery and scatterbrained tomfoolery. So in your case when the Student Hal becomes the Practitioner King beware that you be not tempted to think that the aim of your life, professional success, will come more quickly by compromise with quackery and trickery methods. There is no doubt of the fact: if you are after quick success you will find it that way. But this plan has three disadvantages: you will not find enduring success, you will not be self-satisfied and morally strong, and you will not gain the love and honor of your fellow-men.

To be explicit and detailed, let me counsel a few "don'ts:"—

1. Don't be in a hurry for success.
2. Don't consult or fraternize with quacks of any kind or degree.
3. Don't be afraid of speaking out your denunciation of quackery, regardless of the loss of a few possible patients and the charge of jealousy.
4. Don't support medical journals run in the interests of the advertisers, journals that are muzzled, that are conciliatory to or nondenunciatory of quackery.
5. Don't sign a single certificate so long as you live, as regards special, proprietary, or secret preparations.
6. Don't write a medical article in which such preparations are praised or even mentioned.
7. Don't accept commissions or presents from druggists, manufacturers, opticians, or surgical-instrument dealers.
8. Don't let any professional allusion to yourself, your opinions, or your work get into the lay newspapers. Don't be a sneak advertiser, a "newspaper doctor."
9. In your own righteous wrath against quacks outside of the profession, don't forget that there are many within the profession, and that they are the most despicable—true wolves in sheep's clothing. I would rather be the "Wizard King of Pain," and buy affidavits of impossible cures at twenty dollars each, than a respectable hypocrite indirectly or secretly hobnobbing with newspaper reporters and supplying them with "data."

As physicians charged with the health of the present and future, our duty must become clear: the entire witch's Sabbath of 'pathies and 'isms, the morbid cranks, drunk with ignorance and conceit; the sly cunning of advertising schemers, the tricks and frauds of medical parasites to suck the blood of their dupes, the patent medicine disgrace—all these things must be choked out of existence. It is

a warfare, not a compromise, we are entering upon. It is not a theory, it is a condition that confronts us.

Another need is for individual instruction of people. People are woefully ignorant, medically, and we have been shuffling and cowardly. When a nice little foolish woman or a pig-headed man with arched eyebrows and self-satisfaction tells me, "Oh, I belong to the new school," I at once say, Ach, so!—the very school I belong to—but, we differ as to what the new school really is. Excuse me, do you have the itch? Do you believe that your eau-de-Cologne gets stronger by shaking it, and that if you shake it in a peculiar manner too many times it will get stronger than aqua fortis? Do you believe your ink will get blacker, or your whiskey stronger the more water you put in it? Do "ink-grafts" and Cologne "grafts" work? Do you believe in watching the way the toe-nails grow for a year after taking a bit of vegetable carbon—toasted bread—as symptoms of disease and evidences of drug-power? Do you believe the only safe way of taking medicine is by smelling it? Did you, as a boy, find that stomach-ache from eating green apples was cured by eating green currants? If you don't believe any of these things, you are a sensible person, not a Hahnemannian. These and such things are the only things that can be called Hahnemannian. If you don't believe them, do you think it honest or manly to pretend to believe them for the sake of a few dollars, and sneakingly, hypocritically practice medicine much the same as physicians do, giving common drugs in physiologic doses?

I have been surprised to see how a few minutes' talk with such people makes it plain to them what silly fools they have been, and how egregiously they have been duped. I have looked about for some scrap of literature I could hand to these folks, to show them what roaring nonsense they unwittingly gave their assent to. Oliver

Wendell Holmes's little skit is almost the only such thing. Convinced, however, that people need and will profit by simple instruction honestly, plainly, justly put before them, I wish to have a little pamphlet prepared that, historically and actually, will show up the ridiculous pretensions of modern homeopathic practice. I shall, therefore, postpone a bit of private pleasure I had planned, and offer a little prize of \$100.00 for the best essay on the subject.*

Such a monograph supplied as a missionary tract for gratuitous distribution by physicians, at the cost of printing, would set thousands of people straight, and would soon stop the legislative and financial Governmental support of this trumpery. I wish some millionaire would give me a few hundred dollars to offer as prizes for other missionary tracts, *e. g.*, on the "Patent-Medicine Evil;" "The Reasons Physicians Do Not Advertise;" "Why Physicians Do Not Patent Instruments, Drugs, Etc.;" "The Duty of the Government and State to Medicine;" "Everbody's Medical Duty;" "The Desirability of a Higher Standard of Medical Education," etc. What a disgrace that we cannot get Governmental aid for payment of meat and milk inspectors, boards of health, bacteriologic and hygienic institutes, etc., etc., whilst the people's money can be filched from them to support arrant quackery. What a disgrace that patent-medicine syndicates can draw many millions every year from the diseased, deluded, and poverty-stricken of our people, with a Governmental tax

* An essay should not contain over 15,000 words, and in simplicity and directness should be adapted to the commonest lay understanding. Papers should be sent me on or before January 1, 1893, type-written, without the name of the author, but accompanied by a sealed letter, giving the author's name with motto or *nom-de-plume*. The essays will be given to a competent committee, and when their decision is reached the sealed letters of the authors will be opened, and the prize sent the winner. The essay will then be cheaply but well printed in large quantities, and supplied physicians at the cost of printing.

of only 25 per cent. upon their mixtures, whilst the same people must pay a tax of 60 per cent. upon microscopes, and one of 49½ cents a pound and 60 per cent. besides upon woolen clothing.

The physicians of the civilized world are to day working for the public welfare with a zeal and intelligence, combined with an unselfishness, that no other profession, trade, or calling can faintly rival. Think, first, that these men are almost furiously seeking by hygiene and prophylaxis to render their own calling useless and superfluous, themselves occupationless. That is a fact so strange as almost to seem unnatural in these days of self-seeking, class-legislation, trusts, and combines.

Notice, again, that every instrument, discovery, drug, or invention brought out that will do any good to humanity is at once and unreservedly given to the world. No physician ever patents or keeps secret any discovery or invention. Compare that with the world's way.

Reflect, thirdly, that all the world over every physician, whenever asked, gives his services to the poor without demand or without hope of compensation. Would not a lawyer or a locksmith think one crazy if it were proposed that he should give a large share of his time and service for nothing?

Carry the thought on. The entire tremendous labor, *for the benefit of the community*, of keeping up the enormous hospital work of all the world's cities is borne by physicians without a cent of pay. Are there, for example, thousands of similar institutions where the poor, free of charge, can get legal counsel and help? Is there one such?

It has been the universal medical tradition, accepted without a murmur, that whosoever devotes himself to the healing art must gladly construe his duty in this unselfish manner, renouncing the usual ideals and commercial

methods of the surrounding world. Beyond all question it is a fact that a like grade of intellectual capacity, the same educational preparation, and an equal amount of tireless labor in any other calling would yield a far greater financial result than is secured by the average physician. A great physician said, "If my son goes into the medical profession, I shall cut him off with a shilling." "Why so?" "Because the profession is not appreciated by the public."

It is a public misfortune, a social evil, if there is slowly, subtly, but most certainly, creeping through the profession the lethal poison of a lowered ethical standard. Every person of the land has a selfish interest in preventing our adoption of the more selfish aims and ideals of the world of trade. Business men are very short-sighted if they allow or encourage medicine to become a business. Whenever this change shall have come about (if, alas! it should), and medical success is sought by the prevalent rules of trade, then the degradation will be irreparable, one of the noblest of offices will have become as corrupted and salable as those of politics, and an engine of incalculable good to humanity will have been hopelessly wrecked.

Could one but reach their ears, how one would like to appeal to the general public, to legislators of a serious-minded type, if such there be, to the better class of independent journals, to the more thoughtful of literary men, to the rulers and teachers in colleges and universities, to careful and prudent business men even, to patriots and lovers of humanity, all. This malicious and stupid misconception; this non-recognition of, and opposition to, the true work and worth of modern scientific medicine; this hectoring and bullying of physicians in all their aims for the public good; this cordial support of all legislative and sordid schemes of cranks and quacks—is a social menace and a common danger. It is long past the time that this

suicidal debauchery should have been stopped. To all good citizens it should be protested: This is your affair, not ours. It is as much a national sin as slavery, monopoly or class-legislation, vote-buying, the liquor-corruption, or city-luxury—more than a sin, it is a moral disease of the body politic, and such disease is an expensive luxury. It costs untold money, suffering, and human lives. Every physician knows of many deaths directly due to quackery, but the indirect deaths and consequences are incalculable. Quackery kills thousands to hydrophobia's one. The silent scourges are the great ones—those that cut off single lives slowly but ceaselessly. It becomes for you every day more and more a question of self-protection and self-interest. It is not, as you seem to think, a huge joke, but it is your health, your life, your future, that you are trifling with. Every epidemic of any contagious disease, to put it in the crudest way, means the waste of millions of dollars of lost time, of expensive sickness, and of grievous death. In these United States hundreds of thousands of needless deaths are annually taking place—needless, because you will reach no helping hand to physicians to carry out the preventive measures, discovered and well known to us. In these same States, still other millions of years of sickness and millions of deaths are going to occur during the next few years, again because you will not aid the medical profession to search out other at present unknown sources of disease. There are plenty of possible Kochs and Pasteurs among American young men, if you cared, as they do abroad, to help find them instead of laughing at them, killing them with indignity and distrust, whilst feasting and honoring your beloved charlatans. Are your charlatans founding institutes of bacteriology and preventive medicine? Are they trying to probe the mystery and prevent the mockery of disease? Has it been the quacks that have builded the noble new home of which city and profession

are proud, for the trinity of great schools of Medicine, Pharmacy, and Dentistry, of your beloved Buffalo University? Are you wise as a nation, if, like the old persecutors, you martyrize those who are your truest, most serviceable friends? For the sake of the simplest selfishness, for the love of your children, for the sake of civilization and humanity, for God's sake, let us turn away from the folly and sin of this trifling, and enter at last upon the ways that lead to HEALTH !

THE UNTRUSTWORTHINESS OF THE LAY PRESS IN MEDICAL MATTERS.*

Unless the writing be a verbatim quotation from a medical journal it is quite impossible for an educated physician to finish the reading of an article on a medical subject in a nonmedical journal without a smile either of contempt, of amusement, or of both combined. A strange fatality seems to attend the filtration of medical facts through the lay editorial and reportorial mind. Not long since, the editor of one of the most popular and respectable magazines, with puzzling injudiciousness, allowed a professional humorist the use of his columns to prove that the quintessential nonsense and mummeries of medieval therapeutics had been extinguished solely by the power of so-called homeopathic rationalism and science. By reason of this exquisite illogicality the humor of the sketch to discriminating minds was greatly but unconsciously heightened. In a recent number of one of the best of English magazines, an author and the editor evidently thought that they were firing at the slow-going medical profession a discovery of vast importance as to the resuscitation of asphyxiated persons. What was new in the discovery was not true, and what was true was by no means new. Had we space we could adduce from recent journals of otherwise good reporting-ability a score of examples of most egregious and not infrequently amusing misrepresentation. We complain, so far, of no intentional misinforma-

* From the *Medical News*, November 21, 1891.

tion, but wish only to emphasize the fact that with the best ability and intention the result is ludicrously inaccurate and the mind of the ordinary reader is filled with half-truths and untruths that perpetuate the proverbial and frightfully inaccurate jumble of opinions as to medicine held by the ordinary individual.

If we descend from the better class of carefully edited serials to the preposterous Sunday newspaper and the outrageous advertising sheets supplied Master Demos, we are at once confronted with a farrago of unmedical travesties of medical knowledge quite beyond adequate description and worthy vilification. Here begins an ignorance that is far more than culpable and a misrepresentation that is at once venal and shameless.

Even in many of the best papers the power of the patent-medicine man, the World's Therapeutic Institute, and the advertising agent is supreme. The profitable advertisement closes the editorial mouth or opens it with a promptness that is comparable only to that of a rigid mechanism responding to a preordained stimulus. The most striking exemplification of this has lately occurred. From one boundary of the United States to all the others almost every newspaper of this broad democratic land has been repeating as news and howling as editorial judgment the echoings of a certain hired advertiser's agent of the patent-medicine fraternity, denouncing and abusing the poor druggist who should dare to offer his customer any preparation other than the "patented" cure-all the poor over-advertised dupe of a customer had asked for. The "substitution evil" has been cursed and spat upon with all the wrath of all the money of all the patent-medicine syndicates of all the Americas. What are the facts? A set of sharpers compound some secret mixture, good or bad, of drugs and syrups, and, relying upon the gullibility of people, in order to reap millions, they purchase the press with an odd

hundred thousand dollars' worth of advertisements. The booby dupe calls at the drug-store for the cure-all. The druggist cannot make a cent on the patented and advertised article, so completely has the advertiser got him in his grip. But the druggist knows the ingredients of the mixture, and knows the advertised article is sold at an enormous profit to the advertiser. He is equal to the emergency and mixes his own unpatented medicine, truthfully guaranteeing it in every way as good as that of the patentee, and with a fair profit to himself he can sell it at half the price of the advertised and patented article. In a commercial sense he is doing perfectly right, and everybody but the owner of the secret article must wish the druggist well in his hard lot in thus fighting fire with fire. But in hounding the druggist as a scoundrel the general press has shown most superbly how its opinions in medical matters are anything but useful to the community. Could a single one of these guardians of public morality be counted on to help tell the world what a disgrace to civilization the entire vile patent-medicine business is?

The query arises as to the possibility of setting this right,—of the possibility of so stating medical truths that the common intelligence may be able to understand them, and of the duty and responsibility of medical men in thus molding and clarifying the lay mind about these things. Other departments of science have their plebificators, their professional popularizers of knowledge, and in every other sphere attractive handbooks and simple expository treatises are continually multiplied, which, without distortion and mystification, put even the most unlettered *au courant* with the latest discoveries and the most abstract of scientific truths. Why is it that that which pertains most vitally to the welfare of each and every person is left untouched and the unprofessional mind allowed to grope in a gloomy twilight of fancy, prejudice, and ignorance? The continu-

ance of this condition of the lay mind is the essential and almost sole reason that quackery, medical superstition, and medical sectarianism are of such prolific growth. Ignorance and misinformation are the manures of these sad weeds.

Among many there are three principal methods whereby the profession may counteract the malicious influences at work:—

1. A persistent endeavor on the part of each of us to have modern and scientific physiology made a more prominent part of the teaching in all schools and colleges. Wherever we can, we should try to influence school boards, educators, teachers, and trustees of educational institutions, both primary and higher, to make anatomic, physiologic, and hygienic courses of study a necessary part of the curricula.

2. Medical men should write for the newspapers, and should compile elementary manuals that may popularize medical knowledge without mutilating and rendering it absurd or erroneous. We are well aware of the fearful danger lurking in this advice: the license thereby given the schemer to advertise his professional ability and service,—a danger that in the present state of professional greed and public indiscrimination cannot be too sharply emphasized and prophesied. But it is not an inobviable danger, and its checks and preventions will, with growing intelligence and morality, be speedily found.

3. The noble and marvelously effective new method of general education, known as the University Extension system, should be seized upon and made use of by the medical profession to extend in the minds of all a correct knowledge of the body and its diseases. The instrument seems as if made to our hand. Professors in medical colleges, teachers of physiology, hygienists, even the humblest physicians, have inexhaustible stores of correct observation and knowledge for which humanity is waiting and asking, and which to it would be of inestimable value.

THE DISORGANIZATION OF MEDICAL SCIENCE.*

One of America's well-known scientists, in charge of an ethnologic exhibit at the Columbian Exposition, was asked if there were no distinctive medical exhibit showing the progress of medical science and art. "Progress of Medicine!" said he, contemptuously. "There is no such a thing!" From further conversation it was clear that, in the opinion of the gentleman, by the term medical science is only to be understood the curing of a sick person in its most restrictive sense. It may be asserted, moreover, that this limited definition is that tacitly agreed upon by the general scientific mind of the day. It is becoming more evident that hygiene, with its hundreds of subordinate departments, and its thousands of meeting-points with human life, is becoming autonomic, so far as medicine is concerned, and that soon hygiene and medicine will not only be possibly distinct callings, but that they will necessarily be distinct. Bacteriology is also tending toward a similar autonomy. In a word, to generalize the two aspects, we may say that preventive medicine and curative medicine are slowly drifting apart, each segregating into distinct fields of study and activity, to be pursued less and less by the same individual. Even the medical profession is in various ways assenting to the breach. It is not uncommon to hear some half contemptuous remark about the "laboratory doctor," the "bug-man," or the "sewer-physician."

* From *The Medical News* of July 29, 1893.

But it remains an infinitely serious question whether this is a wise movement or not. It may even be held one of the most important things the profession has to ponder and decide about during the next generation. Its significance is manifest in the fact that with the progress in civilization cure must more and more yield place to prevention, so that as all wise minds seek to forefend coming ill, the function of the therapist as such must be one of progressively lessening influence, whilst that of the preventer must be one of continuously enlarging influence. If the treatment of smallpox a century ago had been the sole duty of the physician, he would now find himself out of work. Thus as one after another we learn the preventions of diseases, the role of the therapist becomes more and more sharply restricted with each new discovery.

It may be said that it matters not by whom or by what class of men the work is done, so that the work is in truth done, well done, and so that society receives the protection. In answer, it should be remembered that there is a doubt in the minds of many if the tendency toward differentiation of function in our work of life is not already excessive. Some specialism there must be, even much, but so far as medicine goes it is agreed that all specialists must first have a thorough grounding in general medicine, and that they must well understand the physiologic and pathologic relations of the special organs and objects of their own study with those of other specialists. Moreover, prevention is never absolute, and no disease is, so far as we can judge, ever wholly stamped out. Hence the curers will always have office, and work to do. Prevention, too, not seldom runs, or may run, into pathogenesis, and the sanitarian or bacteriologist must be on the alert to see that prophylaxis shall not indirectly become the origin of disease. He must be a physician to keep from being a disease-producer.

A multitude of weighty reasons at once arise in the mind,

all going to show that if the two departments of curative and preventive medicine become separated, each officered and manned by men knowing little or nothing of the work, methods, and ideals of the other, it will be the worse for that society for whose welfare we labor. The consequent narrowing of the physician's sphere of labor and usefulness will serve to further emphasize the contempt with which the populace already looks upon the doctor-world. Medical sectarianism will be immensely increased by it, and heaven knows that few greater misfortunes could happen than greater popular ignorance as to the value to the world of an enlightened and powerful medical profession, and of the disgrace of medical sectarianism.

Those, therefore, who shape our legislation and mold popular sentiment should, we think, struggle against the disorganizing tendencies of our science. The work of preventing and of healing disease is essentially one work, and the further apart they drift the poorer will the work be done, the worse for society, and certainly the worse for that part that is content to become, in the ever-narrowing sense of the word, medical. It should never be forgotten that Jenner, Koch, and Lister were physicians. It will be a profound professional misfortune if future discoveries and progress in preventive medicine shall be made by non-medical men. Then will the future scientist ask, with all the more reason and justified scorn, "What progress, pray, is there to chronicle in medicine?" The genuine progress in medicine consists, indeed, in making medicine and therapeutics unnecessary. Those who have true pride in their profession will not willingly give up the work that rightfully, and by inheritance, has fallen to them, but while prompt to relieve the present evil and lessen bad results, they will also seek to prevent the coming evil, and to neutralize the causes whence flow the bad results. Sanitary science, bacteriology, and all those biologic

studies that go to make up preventive medical science must, therefore, be integral parts of the curricula of every true medical school ; the teachers of these branches should be physicians ; the boards, National, State, or City, of public health, quarantine, etc., should at least have medical representatives, if not be entirely made up and governed by medical men. Throughout the land every physician should actively interest himself in whatever pertains to the health of the community, thus showing by word and deed that it is our proper function to prevent as well as to heal disease, and that the two things must be done by one person, and by one profession.

CONCERNING SPECIALISM.*

We have lately been treated in numerous articles to criticisms of specialism in medicine, varying from placid censure of its most obtrusive extremes to violent denunciation of the very fact itself and of all its important illustrators. At first we were inclined to sing in chorus. The recent hypertrophy of specialism, the outrageous extremes to which certain exponents have driven it, especially in America, with our orifacialists, graduated tenotomists, female castrationists, ossicle-excisionists, and all the rest, have always loomed big before our eyes. Assent would therefore be an easy task, especially when the impertinent exaggeration of morbid extremists seems to delight in thrusting itself upon the attention, and insulting all sense of self-control with examples of manifest evil. It may, however, very properly be asked if there is no good to be extracted even out of things most woful. All evil has its uses—at least for purposes of warning.

The first and most obvious answer to the critics—we mean the critics *sans phrase*, the *delendo est Carthago* fellows—of specialism, is that the contempt poured upon the greatest extremists does not apply to the vast majority of specialists. It is unjust to single out the maniacal hobby-riders and sneer *ex uno disce omnes*. All are not alike. The hobby-riders are few and exceptional; the preponderant majority do not deserve the strictures and are not affected by them. It is sheer nonsense to say that the great body of specialists know nothing of general diseases, that “a

* From the *Medical News* of September 28, 1895.

man who looks only into the ear cannot see far into the nose," that "they who view female life through the vagina will have little respect for the stomach," that the surgeon will cut rather than cure, and that for stricture of the rectum the oculist will apply glasses or snip eye-tendons. The people who say such things are cantankerous, and try to say sharp things instead of true things. Argument by epigram may be amusing, but, like government by epigram, it ends nowhere or worse than nowhere. The makers of *mots* never say the truth, only the error they impale. Their desire is not to instruct or to be honest, but to make people say, "How smart!" But if they wished to be truthful instead of supercilious, careful instead of captious, they would take special examples or at least types of extremism and pour upon them the vials or larger vessels of justifiable wrath, and not rain it upon the just and the unjust alike, thereby in themselves logically and literally illustrating the very indiscrimination of which they so bitterly complain in others.

The *tu quoque* argument is usually a weak one, but in the present contention it is exceptionally strong and convincing. There is not a specialist in the land who does not every day see instances of mistaken diagnosis (and hence of treatment) upon the part of the general physician. What oculist, from examination of the eyes alone, has not pointed out to the general physician the existence of hitherto unsuspected nephritis or circulatory disease? The aurist is constantly emphasizing the facts of ear-disease as a cause or medium of communication of septic cerebral disease, or as a result of respiratory abnormalism. The daily rehearsal of tragedies in the specialist's office, plainly due to errors in diagnosis of the general physician, is pitiable. "My doctor told me my headaches were due to congestion and anemia, and never to let any oculist meddle with my eyes;" "he didn't tell me to have my teeth looked after;" "he didn't examine

my urine, although I've had pain in the back for a year;" "he didn't examine my sputum, although I've had a hacking cough for a long time," etc., etc. We do not mean, nor do we think, that the general physician makes more errors than the specialist; we mean that the specialist is not the only medical sinner. It is our conviction that the average specialist is as much alive to the symptoms and importance of systemic disease as is the average general physician, and certainly no one would deny that he is also as much alive to the abnormalisms of special organs *other than those of his specialty*. We sharply emphasize the word *average* as applied to both classes. A recent diatribe against specialism tirelessly reiterates that the present-day variety is empiric. The charge is, of course, too true of all medicine, but to say that it is particularly true of specialism rather than of general practice is topsyturvyism and squarely opposed to a proper reading of the facts. What is the very stronghold of empiricism, what the enemy that the most extreme specialism is heroically fighting to carry by storm—what but general therapeutics?

But if, as vehemently averred, the specialist is the superficial empiricist and faddist, why does the general physician not annihilate him? Why, instead of annihilation, does he encourage the ever-increasing custom of sending the specialist his patients to treat for their special diseases? The specialist's fate lies at the disposal of the family physician. Without reference-cases the specialist would soon languish and die his supposably deserved death. A homely saw says, "The proof of the pudding is in the eating." Is it not plain that the family physician is learning that the specialist has his uses, that he has special ability and excellence gained by special application and experience, and that in our day of the infinite division of function and profundity of research he must often be called in to supplement the general therapist? Has the family physician not

learned by bitter experience that never again can one mind encompass more than a small fraction of the knowable, and that his duty to his patient is henceforth to learn where and of what nature is the root of the evil, and, beyond a certain range of ailments, he must advise consultation with the specialist?

There still linger about the fringes of our scientific world some wonderful specimens of an antediluvian age, strange stranded relics of megalosaurian vanity, or of slimy avarice—the quacks—we mean those within the profession—who “treat all diseases,” they who “turn no patient out of their offices.” Heaven help them—or, rather, help their patients! In the meantime, heaven not helping, the “empiric” specialist must patch up the bungler’s work as best he may after the “all-round man” has finished with his ignorance and mistakes. It is simply maudlin nonsense to contend that any one mind can longer compass or master all branches of medical science. It is painfully evident that any one specialty demands the most devoted application of the very best mental ability and training in order to keep abreast of the giant-progress of the time. The inevitable and ruthless march of scientific progress has divided and will continue to divide the practice of medicine into departments or specialties. There are undoubtedly unfortunate aspects and results of this subdivision of work; they are most glaring as well in other sciences as in medical science; but the law, *divide et impera*, is as predestined and inobviable as gravitation, and to rail at it is utter fatuousness. It is wiser to guide it rightly and utilize it shrewdly.

All critics say the specialist should enter upon special work only after thorough training in general medicine, and that is true; but it goes without saying, and in its final analysis it means that the schools must give a far more thorough grounding in general medical essentials than they do. If it means that every person must practice general

medicine for ten years before taking up a specialty—then there is something to say on both sides of the question. We are unable to see how the delivery of a thousand women or the treatment of five hundred cases of typhoid fever can much help one to be a better aurist, or bacteriologist, or ophthalmologist. It is easy to demand much of the young physician, ambitious, short-lived (*ars longa, vita brevis*), and eager to be at his real life-work. He certainly should be consulted a little about it all. The advice savors a little of the old maxim about learning to swim without going near the water, or in another aspect it looks like advising an *experimentum in corpore vili*; but mistakes in specialty-practice are hardly more expensive than those in general practice. We are not advising the young graduate to plunge into a specialty at once; we are contending for the due weighing of circumstances, ability, training, and all that.

And what does one mean by specialism? Where will one draw the line? Should every family physician be also a surgeon? Assuredly not! It is simply impossible. It is to-day truer than ever that no man can serve two masters, much less a dozen or two. Should every physician rely upon his own judgment as to refraction? Should he treat obscure aural diseases? Should he be his own bacteriologist? Not in any case if he have a particle of modesty, or honesty, or interest in his patient's health.

Beyond all question and despite all abuses, the rise of specialism has been the condition of medical progress. How many thousands, nay, millions, of people are there to-day blessed with ocular health and ability to carry on the duties of civilization by reason of the work of Graefe, Helmholtz, Donders, and their followers. Would any of the discoveries in ophthalmology and their applications have been made without the specialist? What has revolutionized surgery but specialism? What is now revolution-

izing all medicine but the work of the specialist in bacteriology? Has there been a single great discovery in modern medicine that is not the work of the specialist, or of men who, if living, would to-day be specialists? Is specialism not the absolute *sine qua non* of promised discovery in the future!

Finally, mark it well, the family physician is now quite as much a specialist as anybody else, and this whole pother of discussion is a mere meaningless war of words and misunderstandings. The general physician does not treat more diseases, perhaps even less, than the physician who confines himself to a single organ. In the progress or process of subdivision the generalist has become the veriest specialist. Moreover, almost every disease has or may have its effects upon every special organ, and no specialist who ignores general diseases, and diseases of other organs, will henceforth be able to hold "the pace" set for him by his broader-minded and more comprehensive rivals. Thus the evils of specialism—evils that we acknowledge and deplore—are in a fair way of curing themselves. The way as advised by high authorities should not be backward, but on through! Specialists will not, cannot renounce their peculiar work, and become general physicians; science and humanity cry out against such an absurdity; the way through is the right way. The specialist is already becoming the general physician in the sense that he knows the limits of his own knowledge, and does not try to do what he cannot do, but advises consultation with those who can and who do know. This also the specialist family-physician is fast learning, and so he is broadening also into general practice, and no longer puts "drugs of which he knows little into a body of which he knows less, for a disease of which he knows nothing."

Theoretically the essence of the controversy and of the whole matter consists in the attainment of the vantage-

ground of accurate knowledge of at least one organ, and of the diseases of that organ. From this standpoint one cannot worse but better survey the whole field of medicine.

But the practical lesson of it all is that every one—*i. e.*, every “specialist”—shall learn to confine himself to the work he is competent to do, and beyond that to advise consultation with others more competent to treat certain organs or diseases; and the advice to consult the specialist family-physician has been, is, and will remain that very frequently given by his coworker in other specialties.

MEDICINE AND CITY NOISES.*

Not long since a foolish gentleman, who preferred to live in New York or not to live at all, committed suicide rather than to longer endure the ear-splitting noise of the bells of a neighboring church. In thousands of cases people are being made ill, are committing slow suicide, or are being painfully and slowly killed by useless city noises. Noise, then, becomes a question of health and of medical importance concerning which physicians should have a word to say and a duty to perform.

Scientifically, our rebellion against the noise-makers is founded upon the physiologic truth that rest is necessary to health, and that over-stimulation or persistent stimulation of any organ or of all organs is essentially pathogenic. Herbert Spencer secured for himself a sad sort of freedom from noise by a mechanic contrivance that held some kind of soft plugs or stoppers in the external auditory meatuses. If there were only some method whereby one could at will shut out unwelcome sound, as one can shut out the light from the eyes; if some aurist could devise an artificial method *à la* Spencer, one that would not injure the ear, he would be a great benefactor to humanity. The evil done the few people that would thereby possibly be burned to death or otherwise injured would be small, as compared with that of the many deaths and much sickness due to noise.

Sociologically, the whole community has an unrecognized duty as regards noise that rests upon a physiologic

* From the *Medical News* of August 26, 1893.

and esthetic basis. Delicacy and accuracy of response to a physiologic stimulus are the characteristic marks of perfection in an organism. Whatever prevents this is against the welfare of society and progress. In this brutal noise-making era, one of two things must follow the ceaseless bruising of the mind by noise. Either the auditory mechanism, and the nervous mechanism with which it is related,—that is, the whole mind,—must become blunted in sensitiveness, crushed, and stupefied; or it must react pathologically. People are, therefore, divisible into two classes: those whose nervous systems and minds are becoming mechanized, anesthetic, and brutalized, and those who, thus failing to kill sense and mentality, develop disease-reactions. The distinct agency of noise is to make us either savage or sickly. Civilization, of which noise-making is a decided component, is thus bearing in its bosom a self-poison, to its own undoing. We are losing all refinement and delicacy of the senses and are reverting to the condition of the barbarian whose senses had to be pounded and whipped into reaction, or we are becoming neurotic, hysteric, and neurasthenic. Generally and progressively, "Society" is either a crowd of the mentally stupid or of the hyperesthetically morbid, and social amusement is becoming a game of battering and spurring jaded senses, or of ministering to sense-diseases.

In the narrowest sense, we are medically bound to reduce the amount of noise-making, not only because noise engenders disease, but also because it prevents the cure of disease, or aggravates disease, very often, indeed, is the immediate cause of death. In an American city like Philadelphia there are something like 3000 needless deaths, and the equivalent of 6000 years of needless illness each year. What proportion of this waste of life is due to noise, it is, of course, impossible to say, but certainly a considerable proportion is chargeable to it. The sick are in private

houses scattered all through the city, or in hospitals that are often located in the most densely crowded portions. Every physician knows how necessary quietness is to the sick, and how often noise has been the last baneful influence that the weakened organism could not resist, and thus the controlling and distinctive cause of failure to cure.

The recklessness of production and the unnecessariness of modern city noises are disgustingly astonishing. The worst of it is that they are even kept up throughout the night. If the night, at least, were kept quiet, and the organism were thus given periods of repose, it would not be so impossible to preserve normality of sense-reaction and sanity of mental reaction. In Philadelphia one or a dozen drunken brawlers may make the night hideous with howl and curse and obscenity. Remonstrance with the policeman elicits a smile, with ill-concealed contempt for the remonstrant as a crank, and the avowal that he has no authority to interfere. In Philadelphia it is illegal for locomotive-engineers to blow whistles, and yet all night long sleep, at least in summer, is to healthy ears and minds impossible by reason of this ear-splitting curse. Street-car bells rung all the time (by horses or by wheels) are no protection to the public, and yet the public submits to the horrible nuisance. The laying of railway-tracks and the paving of streets at night are only necessary for the advantage and profit of mercenary corporations, and yet the authorities have no power, or do not assert it, to repress the evil. If our freedom-loving American submits to the dictation of his tyrant and master as to trolley-cars, his master puts down the new tracks at night, with fiendish noises, and will by and by run the cars with the still more fiendish and ceaseless noises.

From whatever aspect the subject be considered, it seems strange that people will submit to the indignities of the noise-makers. A thousand are outraged in order that one

or a few may possibly be benefited. The shrieking of whistles and the ringing of bells to notify workmen to stop or to start work is an instance in point. Everybody has a watch or a clock at hand. Why, then, blow the whistles? Why, also, thunder or jangle bells to tell people that should be asleep what o'clock it is during the night? The 10 per cent. of people who go to church must be warned by bells; but have the 90 per cent. no rights who do not need or heed? and what about the sick? The milkman arouses a whole neighborhood in delivering a quart of milk. The cartmen, the peddlers, the hawkers, the ragmen, etc., bawl and howl to be heard half a mile away if some other greater noise near by do not drown their voices. There are persons that think it strange that barking dogs and crowing roosters in a city should be objected to.

All noises may be divided into the necessary, the partially necessary, and the wholly superfluous. The makers of the last class of noises should be proceeded against in the interests of the public health by all the forces and with all the vigor at the command of physicians. And this by all odds is the largest and most injurious class of noises. Here is a work ready for the Associations for the Public Good. There is something particularly exasperating and baneful about the unnecessary noise in the very fact of its unnecessariness. Let all the loafing rowdies, howlers, hawkers, whistle-blowers, bell-ringers, and the rest be incontinently hushed, and especially if they carry on their diabolism at night.

Concerning the class of partly preventable noises of cities, the greater amount of them is connected with street traffic, and here arises the great need of good, smooth pavements. As with the strawberry, so it is with the asphalt pavement,—doubtless a better one could have been or may be invented, but doubtless it never has been in-

vented. It is incomprehensible that people should consent to endure the torment arising from the stone and boulder pavements, and seemingly designed, like African music, for creating the most intolerable clatter possible. In addition to this aspect of the question, there is another reason why, as physicians, we should do away with block and cobblestone pavements: they are excellent culture-grounds for lodging filth and disease-germs. The asphalt pavement offers no such a nidus and can be easily flushed and kept clean.

The degree and character of the civilization of a country are indicated by the amount of unnecessary noise it endures, and this is accurately gauged by the condition of the pavements of its cities.

THE NOISOME NOISE OF UNMUSICAL MUSIC.

"The *News* is delighted with the responsive Amen! in many lay and medical journals and from personal correspondents as regards its protest against the brutality of the noise-makers. It is a pity that we should end with protest only, and that legislative and police restriction cannot be made effective. Let everybody appeal personally and by letter to the proper administrative authorities and demand that illegal noises shall be stopped, and that those that are not absolutely forbidden shall be lessened. Medical societies should act as bodies and through committees to abate these nuisances. The hours for sleep should be kept quiet for the thousands of sleepers and not monopolized by the half-dozen brawlers and howlers. There seems to be a tacit understanding on the part of the police that anything that a South-Sea Islander or an Oriental would call 'music'

must be sacred, no matter how execrable and ear-splitting the din or the bawling. The police of Philadelphia would not think of stopping a crew of drunken, singing rowdies, a darkey band, a French-harp fiend, an organ-grinder, or an accordion monomaniac from committing his crimes against health, no matter if the iniquities are carried out in what should be the stillness of Sunday or of the night. The air-beaters and ear-bangers have it all their own way, and if a lot of well-to-do folk meet together to eat and chat, they set a worthy example by having a band to scrape and blow musical sounds that not a single diner listens to for a second and which forces him to roar and bellow at the top of his voice to make his neighbor six inches away hear a spoken word. 'What you talk about is music, but what you like is noise,' said a wise man to his pupil, and it is true here and to-day."—[*Medical News*, September 9, 1893.]

MEDICAL ASPECTS OF LIFE INSURANCE.*

Every thoroughgoing Darwinian, Spencer chief among all, is never weary of pointing out that modern civilization and sentimentalism works to the survival of the unfit, thus contradicting the plain trend of the ordinary laws of biologic evolution. Devolution is in this way set against evolution, and instead of progressively strengthening and hardening the race, there are subtle forces sapping the vitality and rendering the more luxurious or civilized unfit for competition with the sturdier and biogenetically more obedient races. The great growth of civilized luxury is thus working to produce an ever-increasing army of social parasites, who, without aim or ability, live but to enjoy themselves, and make a miserable failure even of that. Indiscriminate charity, say the evolutionists, complicates the problem and exaggerates the natural supply of hangers-on, while the weak, the stunted, the diseased, the defectives of a thousand types, are nursed and coddled by protection and kindness to propagate their like, and thus handicap both the present and the future in the struggle for existence that is said to underlie all genuine elevation or even persistence of stock. Looked at from this standpoint exclusively, it has been contended that medicine itself is guilty of sustaining those in half-life, who, having received their death sentence, postpone the execution, useless retainers, pensioners, and camp-followers of the much-enduring, hard-pressed army of civilization. It has indeed been contended that had Koch succeeded instead of failing

* From the *Medical News*, January 23, 1892.

to find an effective tuberculocide, he would thereby have done the world the greatest conceivable injury in licensing the weak-lunged, narrow-chested, deoxygenated failures to become the breeders of the coming race.

Now, however false and one-sided these views may be, and false and exaggerated we believe them, it is still always advisable to "heed the other opinion," know it, estimate it at its proper value, and meet it with logic and valor. We may shudder at the awful chasm such an unmoral and brutal lifting of the clouds discloses at our feet, but if the deep is there, the shudder itself renders us less steady of foot, and less possessed of aplomb. Happily, the confutation of this view is easy. If none other existed, the fact is patent that the workman's children are better breeders than those of the nabob. Parasitism begets in men debauchery and physiologic degradation; in women, weakness, hysteria, and general good-for-nothingness. The children of the rich are "poor risks."

This, however, is but a too long preamble of a thought as to life insurance and the role that it is coming to play in our modern life. Is it, like luxury and vice, one of the great powers reversing the law of evolution and working to race deterioration?

There can be no discussion as to the fact that hygiene, sanitation, increased comfort, and medical science have contributed to a lengthening of the average human life. But the life-insurance rates of premium continue so high that despite palatial offices, opera-bouffe salaries, and all that, it becomes a puzzle to presidents and boards what to do with the enormous surpluses constantly increasing.

Again, medical science has grown so shrewd that coming death may be long foreseen. Doubtful risks are refused, and thus the insured are those most certain of long life. Risk is thus reduced to a minimum and the surplus naturally grows.

The crux of the argument is reached when from the foregoing premises it is logically seen that with high premiums only the well-to-do and the long-to-live *can* insure. The poor—those on sentimental or religious grounds most needing insurance—*cannot afford* insurance, and the unhealthy, or those of suspicious heredity or occupation—precisely those again that, from sympathetic or ethical reasons, should be most and best insured—cannot pass the examinations. Those children of the deceased parents who were rich enough and healthy enough to insure are left with a competence that gives them a solid *locus standi* on the globe, and permits them again and always to multiply; whilst the poor workman and the “poor risk” who had neither the money nor the body to secure insurance for *their* children, early leave them sadly and doubly handicapped in the race of life.

Such, undoubtedly, *has been* the influence in the past. Need it, or will it be so in the future? Proofs are beginning to multiply that an entire change of front and of policy is, or is to be, undertaken. Some form of socialism is “in the air,” fated to come. The life of the community is above that of the individual.

Already several counteracting forces are at work:—

1. The shame and crime of dishonest “graveyard,” infant, and “get-rich-quick” insurance (or *assurance*) companies cannot blind the discerning to the fact that mutual and assessment companies, if properly watched and controlled, can give, and do give, trustworthy insurance at one-half or one-fourth the rates of the old companies. If, as need not happen, the company stops to-morrow, there is no exodus to Canada, and it has given value received up to date. There seems no reason why a precise amount of insurance should not be bought for a definite time, exactly as one buys so much coffee, house rent, or a time loan. And further, why should not the premium be dependent upon

or in proportion to the medically-estimated probability of life for each case? At present it is either sheep or goats—two classes alone—but just as we all are a little wicked and a little good, so our chances of approaching death are of all degrees, and ratable in proportion.

2. Many companies are so transforming their business that it is becoming that of a savings-fund or investment company, the death element an excluded, minor, or inconsiderable one.

3. Many companies that will not break the rule, wink at or whisper to their medical examiners to use not a little discretion. Albuminuria is becoming quite "physiological;" a little cardiac hypertrophy, a slight mitral murmur, a defective hereditary history, etc., are ignored. The printed rules stand, but the personal equation is given much play.

4. Companies are forming to insure those excluded by the rigid medical examiners of the billion-surplus companies, *i. e.*, accepting more doubtful risks, whilst yet other associations are forming to insure whoever will without any medical examination whatever.

5. Governmental insurance and systematic generalized pensioning is either under way or preparing to hoist anchor.

These and many more considerations that might be adduced go to prove that "the bars are being let down." It is felt that, taken as a nation, our people are paying for their partial and unjustly classified insurance an excessive rate, and receiving therefor an insurance that discriminates unjustly between the classes and the masses. Individualism in insurance must have limits, and the common health, as well as the commonwealth, has its significance, duties, and demands. The tendency to socialistic legislation, the generalization, the extension of the pensioning system by corporations and by government, government insurance itself—all these and more point to the fact that the health

and death of every member of the community is of interest to every other member. Disease, if not self-interest, binds us all together and makes our own well-being depend upon that of every other. Preposterous as it may seem, the rates of premium are higher for the healthy and rich because the poor and unhealthy are excluded. A strange fact is coming to light: one of the richest of New York insurance companies, one that takes the most doubtful and dangerous risks, has one of the lowest death rates. The life companies will soon learn that popularizing, broadening, and generalizing, making less stringent their medical examinations, will not only cheapen the premium, but strengthen the company and multiply its power for good.

Thus, sooner or later, one sees the medical aspect of a study, whatever it may be, comes uppermost. There seems no doubt of the ability of companies to lower the premium, or to lessen the rigidity of the medical examination, or to do both combined. As a skilled and directing chief officer of these great powers of modern society, the medical examiner for life insurance companies should use his encouraging influence toward extending to those less equipped with health or money the beneficent action of the communal helping hand in time of sickness and death.

FOOT-BALL.*

To one who is not bereft of reason and moderation by the "rush-line" of a popular craze or fad, it is simply astonishing to witness the excesses permitted—nay, encouraged—in the name of athletics and education by the foot-ball enthusiasts.

Note, first, the clear trend of the whole affair toward professionalism, including betting and gambling. It is simply absurd to longer shut one's eyes to this fact. Pseudoeducators and wild enthusiasts may deny or seek to ignore it, but it is fast becoming an open secret that men are making a livelihood by the game, that sometimes their expenses in college are paid for the purpose of winning match-games, and that betting on the results of the matches is growing more and more common. Now, a frank, out-and-out professionalism in athletics is not so bad a thing, if the game be truly an athletic and hygienic one, and not brutalizing to mind or body. But one who to any small extent is aware of the way collegiate politics are becoming bound up with semiprofessional foot-ball politics must deplore the malevolent influence of the game upon modern educational tendencies.

And, in the name of education—what a farce! Can any sane man deny that in founding, endowing, and encouraging institutions of learning, the object is to fit men for the intellectual battles of life? Can he deny that the training and development of the muscular system, desirable as it is or may be—and there is only one thing that is more desir-

* From the *Medical News* of November, 1893.

able—should be subordinated, as a feeder and supporter to mental athletics? Finally, can it for a moment be denied that the student who is a foot-ball enthusiast, whether player or “howler,” is nowadays giving a disproportionate amount of his time and interest to the game rather than to his studies? Does the collegiate “foot-ballist” desire rather to stand at the head of his class, school, or country, as the best-educated man, or to win the applause of 20,000 spectators, and to have his hideous picture and his biography spread before the readers of every daily paper as one of the winning team in a match game?

What do professors and educators mean who encourage such a tendency? It is either an undignified renunciation of their proper office and function in favor of the professor of athletics and physical training (would it were even so good a thing as that!), or it is a concession to a low type of collegiate politics and to an irrational fashionable fad.

Do they not suspect that they are raising a ghost that they cannot “lay” again? Wise educators are to-day frightened at the influence of the foot-ball problem, and are seeking earnestly to check the fatal tendency to rowdyishness and coarseness following necessarily and closely upon such practices and abuses of the game instinct.

We are well aware of the favorable statistics the enthusiasts offer as to the influence of athletics on education. There are two fallacies in them: 1. Foot-ball is not athletics, and the influence of this game will soon reduce the good average as shown by and due to athletics proper. 2. The statistics are gathered and offered by the enthusiasts of the game.

In the name of universal and of university gymnastics—what a farce! Instead of carefully training each and every student physiologically and systematically, so that his bodily defects shall be corrected, and so that his body shall be a supple, strong, and beautiful servant of the mind, there

is a concentration of all training upon one man out of a hundred, for a special and not by any means beautiful purpose. Ninety-nine let one do their exercising (excepting the vocal part!) for them, and we have the noteworthy result—vicarious athletics, or gymnastics by proxy. Athletics by proxy can only be compared to religion by proxy—the plan of some religious sects that hire a few professionals to do their worship for them—they, the passive audience, watching the performance. The aim of educators, so far as it relates to athletics, should be to give every student a rounded, harmonious physical organization, not to train a dozen or two dozen semiprofessionals (sometimes wholly professional except in name), hired, bribed, or wheedled to attend the institution, to be a show-team, and win matches in order to attract students to the institution. The college that has not a splendid gymnasium, large enough for every one of its students, and a compulsory system of physical training for each has little just claim upon parents or the public. The wise father, other things being equal, will send his son to the college that has the best general gymnasium and the poorest record in winning public athletic games.

In the name of esthetics—what a farce! What a remarkable spectacle is that of a quilted, bepadded, disheveled, long-haired, begrimed, scarred foot-ball hero who finds glory in a savage's scrimmage in the mud! A sane and healthy enthusiasm and love for athletic excellence must have some artistic touch to it. How would the hero of the games of classic Greece at the height of that nation's splendid athletic development compare with our bruised and dirty hero of the foot-ball field?

In the name of hygiene, physical and mental—what a farce! Last week near New York a young man's neck was broken on the foot-ball field. The enthusiast sneers when the game is called brutal, but in sober earnest is

prize fighting less brutal? Doubtless foot-ball has killed more persons than fisticuffs. The papers teem with accounts of the physical injuries of the players after every game. These young men are getting to be proud of their injuries, their sprains, their battered faces, and wrenched limbs. Is this not topsy-turvy? Is this gymnastics? If so, it is inverted gymnastics—on its head in the mud! We laugh at the outrageously perverted pride of the German student who exhibits his chopped and mangled face as a proof of glory instead of shame—and we are going the same road. Wise fathers are beginning to refuse their sons permission to play a game that relies for its charm upon a distinct reversion to a barbaric type of sport, in which savagery, danger, and the lowest kind of physical prowess are the alluring elements.

In the name of example to the young—what a farce! A game must be translated into the vernacular of the street-urchin to illustrate clearly its possibility for evil. The beautiful games of cricket and base-ball have, on the whole, been a blessing to the country; they are not brutal they have large elements of skill and intellectuality in them; they encourage suppleness and all-round development of the body, of the senses, and of the mind. A "scrub-game" by suburban boys, or even by street gamins, does not make the players worse than they naturally are,* does not arouse all the fierce and brutal passions of the savage nature, none too easily held in control even by the best. But compare this with a foot-ball game by the same half-civilized or quarter-civilized little savages, and one sees quickly the influence for evil of apparently so simple and small a thing as a game. If, governed by rigid rules and umpires, the presence of a vast, refined audience, and the possession by the players of good home-training, education, and all that, the game results in charges and the facts of "slugging," and in passionate enmities and rivalries,

what then is to be expected from its translation into the conditions of the alley, the vacant lot of the city outskirts, and "played" by the most unregenerate types of human nature? Imitation is flattery—usually—but in this instance the flattery is nauseating even to the flattered.

It is a cause of deep regret that we should approach the ideal of Rome in our national sports, rather than that of Greece, and it is especially significant when educators and universities show this tendency. One would not expect them to encourage gladiatorial rather than intellectual and truly athletic contests.

Have we not more patriotism and originality than to accept this worn-out, brutal old game second-hand from England? Have we not enough intellect to put some true "play," some ingenuity, and spontaneity into our national sport? Have we not enough mind to introduce something into play except "a secret code of signs," "undergraduate rules," and a coarse scrimmage of a dozen bleeding, bunched, and scuffling fellows sprawling in the mud?

If not in the name of general education, then in the name of medical education; if not in the name of morality, then in the name of medicine; if not in the name of esthetics, then in the name of physiology; if not in the name of social progress, then in the name of hygienic progress—it is time that we should command, Halt! The game is un-American and absolutely opposed to the spirit of true education, whether of the mind or of the body.

PROMISED FOOT-BALL REFORM.*

To one who can read between the lines, the actions and arguments of the foot-ball advocates are furnishing a con-

* From the *Medical News*, January 13, 1894.

stant source of excellent amusement. They are bound to take note of the arguments, moral, educational, and physiologic, against the game as it has existed, but more especially are they forced to consider the profound wave of popular indignation rising against past excesses. Instead of a means of attraction of students it is quite possible that the game may cause subtraction. In this dilemma a way out has been found by reluctant acceptance and forced advocacy of reform. Reform is promised, but the funny part comes in when we note the ill-concealed disgust at the nauseous dose. However, the critics of foot-ball excess may rest satisfied with their work, if reform of the rules be really brought about, and if it be such as to do away with the evils of the game. This will be the critics' work, and this is all they have wished. "Reform within the party" was not tried spontaneously, and has only been promised by force of compulsion, criticism, and popular feeling from without. The critics may also point out that the speciousness of the logic so far offered in defense is apparent in the fact that every line of the argument could be applied in favor of boxing. Indeed, in the late magazine defenses of the game every time the word *foot-ball* occurs it could be replaced by the word *glove-fighting* with equal and even with sounder logic. The difference of acceptance of the logic consists solely in the fact that foot-ball is the fashionable fad of the day and prize-fighting is not. There will never fail able, at least plenteous, defenses of the customs and demands of the *Zeitgeist*. Every English Bishop, the powers, votes, and logic of the Established Church (by name, of Christ, and of Religion) arrayed themselves against the abolition of slavery—all of which does not affect the fact that slavery was wrong, unchristian, and irreligious. To flatter the *Zeitgeist* and "the powers that be" is pleasing to that fickle and faithless tyrant, and, temporarily, very, very profitable to the flatterer. But, again, flattery, ap-

plause, profit, and honor cannot alter the facts that, as carried on of late, foot-ball has not been in the interests of true athletics or genuine physiologic culture, and has been very far from furthering the clear purposes of education and of educational institutions. Hence when the advocates of the game (however grudgingly and slurringly) acknowledge the past abuses, and promise such reform as will do away with these abuses, we warmly cry them welcome, and beg pardon for any "excess of zeal" on our part. We are all, it seems, in favor, and most heartily, too, of the best and most perfect development of the human body; but we protest that this must be consistent with, nay, subordinated to, the best and most perfect development of the human mind.

MUSCULAR DEVELOPMENT AND USE THE CONDITIONS OF HEALTH.*

It was, we believe, a saying of Pascal that the evils that afflict mankind arise from an inability to sit still in a room—meaning thereby that in useless and ill-considered action is to be found the origin of much tribulation, and that calmly thinking out the best methods of action in advance would obviate it. But the modern physician and hygienist must often feel like reversing Pascal's *mot*, and saying that the evils that afflict mankind—or more truly womankind (the same thing, however!)—come mainly from sitting still in a room. We mean by this that the great and the increasing prevalence of sedentary and indoor occupations inflicted on human bodies is already ripening a wretched source of physical (and hence psychic and moral) suffering. If there is any truth at all in evolution it is that animal and human life and progress have always been conditioned upon the exercise of the muscular system, that function precedes and begets structure, and that disuse leads to atrophy and death.

The disuse of the muscular system that is a result of civilization is the prolific source of much of the disease of modern life and an illustration of the biologic law. All the discoveries of modern medicine and science, every bacteriologic truth, every known etiology of disease, simply confirms the truth that, together with cleanliness, muscular health and development are the necessary conditions of freedom from disease, and that there is no health of the muscles without use of the muscles. The bacillus of

* From the *Medical News*, November 18, 1893.

tuberculosis has no power of harm to a person with proper thoracic and pulmonary expansion and development. All "consumption cures" except this one are useless, and this with some exceptions is effective in prophylaxis or cure. There is hardly a disease that does not equally well illustrate this truth.

What is civilization doing with this law? It is crowding people into huge cities, where every means of artificial locomotion, every labor-saving apparatus, and every necessity of business are all working to the same end of inactive muscles. From the weak, half-atrophied muscles naturally follow the defective digestion and assimilation of food, and the over-wrought hyperesthetic morbid nervous system, ever vainly seeking to undo and to right the evils of denutrition, hypernutrition, and muscular inactivity. Our food is premasticated and we are becoming edentulous, and from the advertisements of predigested foods it would appear that we shall soon have no need of a private stomach, liver, or pancreas, because we can and should buy these products from the slaughter-house and laboratory, and thus save personal wear and tear. It is in the line of the much expounded physiologic division of labor. But that line logically and inevitably ends in the condition of some slave-holding ants that cannot move, and unless fed by their slaves die of starvation even when food is before them. Of course, we already have analogues of these little organisms in the increasing horde of urban hysterics, neurasthenics, rouses, and tramps of various sorts, both aristocratic and ragged.

And lastly, comes the sham-science that would supply the want of healthy vital powers of all kinds, cerebral, muscular, testicular, and what-not, burned out by abuse or atrophied by disuse, by means of squirting into the veins or under the skin some of the supposed vital, but really dead and inert, juices of animals.

And even our frantic attempts to remedy the evil of muscular inactivity, with its spawn of varied disease, are themselves morbid, and sometimes serve to increase the evil. This fact becomes plain in our rage for athletics by proxy, and in the steady trend of athletic games toward professionalism and newspaper notoriety, sensationalism, to the encouragement of betting, and to the more brutal sorts of arena combats.

So far as cities are concerned, one of the most crying of evils is over-pressure of school-children. Every physician has daily before his eyes the sad results, and he knows that instead of medicine the poor little body needs play and exercise, and out-of-door air and sunshine. All of the book-cramming that can be jammed into them will never compensate for the pallor, the pipe-stem legs, the narrow chests, and the stunted or abnormal growth.

The city child needs what it cannot have, country life. Failing in this it should be supplied with abundant, healthful gymnasium exercise, under the careful eye of expert and discriminating teachers of hygiene and physiologic development.

All of this is doubly true as regards girls and women. Fashion and house-incarceration and wealth are reducing our women to sad specimens of bodily and muscular ill-health, flabbiness, and undevelopment. Either publicly, or in private to parents, every physician can point out the truth, and by his advice may help to avert the crop of coming disease or, in some degree, to cure the pathetic instances that fall under his care.

EVERYBODY'S MEDICAL DUTY.*

Perhaps you feel surprised and doubtful as to the existence of any medical duty you may owe, either to yourselves or to your fellows. You probably are inwardly saying that you know nothing about medicine, and that you employ a physician to attend to medical matters.

My purpose to-night is to impress upon you the truth that each one of you has many and very important medical duties, and that you must no longer shirk them, because these duties are most imperative and vital to the lives of each and every one. The medical profession is struggling under the Atlantean world of deputed responsibility you have thrust upon its shoulders, but the labor is hard and the result less successful because of your persistence in vicariously ridding yourselves of the duty. In politics, all good citizens are convinced that leaving Government and Legislation to professional politicians and bosses is highly immoral and ineffective—it is political crime and leads to the death of patriotism. So in medicine you must not turn your own work unquestioningly over to the medical bosses, but must see to a large part of it yourselves; you must at least strengthen the power of those who are able to be trusted with medical office-holding, and must destroy the power of the corrupt bosses. In other words, you must personally attend the primaries.

Our medical duties, like any duties, do not refer alone to ourselves or to our families. The public health is your

* An Address delivered before the Unitarian Club of Philadelphia, February 11, 1892.

health. The community is a vast family, and the possibility of disease and death unites us in one common bond of self-interest. If each of us did our duty in the prevention of disease, the average life would be lengthened, life-insurance premiums would be less by a half, and the friction, sin, sorrow, and vice of life immeasurably reduced.

One of our medical duties of which you are most shamefully neglectful is lack of helpful sympathy with the medical profession. Here is a body of men, the like of which in devotion and self-sacrifice to the interests of society has hardly ever been seen. Assuredly nothing like the spectacle exists to-day in any other equally large class of men. In a recent novel Robert Louis Stevenson says: "There are men who stand above the common herd, the soldier, the sailor, and the shepherd unfrequently; the artist rarely; rarer still the clergyman; the physician almost as a rule." In Philadelphia there are besides the private cases annually treated by physicians, about half a million public cases of disease among the poor (and many that are not poor, alas!) for absolutely nothing. Every hospital of the land is carried on by the unpaid labor of physicians. Are there twenty-five; is there *one* great institution, or one ever so little institution, where poor folks can go and get legal advice, counsel, and help, gratis? Do your tailors furnish people with clothes for nothing? If you get married or die, your minister is paid, and rightly so, for his labor. Far more than this, scientific medical men are working, not only to cure, but with undaunted, tireless zeal, to prevent disease. Whilst almost all the rich are forming plots, "combines," and "trusts" to increase their share of the commonwealth, and to magnify their power, whilst the tradesmen and mechanics and laborers of every kind are forming unions and trade-guilds to protect themselves, the medical profession not only forms no union, no self-protecting guild, but is laboring heroically to render itself useless

and occupationless. Now, despite this splendid unselfishness and zeal for your welfare, how do you treat the profession? You cultivate and support quackery, which is one of the curses of civilization, and which in injuring the profession slightly, does the community infinitely more harm. The newspapers are filled with quack advertisers, bent only on getting money, without medical knowledge, caring nothing, knowing nothing, about curing. You support all this, because you allow servants, family, or friends to patronize these wretches. Sectarianism in medicine, a moral and medical sin, is finally your work. Not only this, but of the regular medical profession you too often prefer the quack in the profession to the better man. If you see in the daily papers an account, a "reading notice," of some miraculous operation performed by some sneaking advertiser in the profession, or some pompous nonsense about professional matters, you think this must be a very smart man, and when ill, you will go to him. You do not think that physicians who do these things have directly or indirectly been in collusion with the newspaper reporter, that they are advertisers and quacks, whose professional opinion is scientifically valueless.

Moreover, whenever, to protect you from their scoundrelism, the medical profession tries to get laws passed against charlatans, laws to stop their knaveries, laws to elevate the medical profession and keep out of it the ill-educated and the unfitted, you do not help us, but allow the interested and combined hordes of quacks to so intimidate your legislators that they fear to vote for decency.

Lastly, you allow the patent-medicine outrage to flourish, to control legislation, to poison your bodies and pollute your health, and befoul every newspaper, barn, house, fence, and field with beastly advertisements.

Some day the darling child of your own life sickens and

dies, or recovers to become a physical weakling and sufferer. If you ever come to realize that this was because you did not guard against tuberculous or otherwise diseased milk and meat, you then realize that you have shirked a medical duty—or, if you please, a medical self-interest, because self-interest and duty are often synonymous. If you find the poison of subtle disease striking down yourself or friends, you again may come to know of a medical duty you have forgotten of preventing typhoid fever or other contagious disease by proper drainage and sanitary measures. A hundred such illustrations readily occur to you, now that you think of the question.

It is a strange fact that people cleanly in some things are filthy in others. The medical motive may come in play when the motive of cleanliness has been wholly forgotten. Hence it is that some people who seem to care nothing for certain kinds of filthiness, may come to care for the possible disease that often accompanies the filth. For example, I never go on the street that I am not nauseated and shocked to see some well-dressed, or rather expensively and poorly-dressed, woman sweeping the trail of her dress through pollution and indescribable street-deposits. She does not seem to care for the nastiness of it, but if she could realize that she may be bringing home with her some of the most horrible and deadly germs of disease, to be dried and scattered over her home, to be breathed by her family, and perhaps to fatally poison bodily life—if she knew this as physicians know it, she would certainly not do it. One other little example : On coming to Philadelphia, my wife and I were maddened every market-day by being forced to buy and have brought home fowls long dead, but with the intestinal filth still polluting the flesh. Bacteriologists know what a breeding-ground of pathogenic bacteria and toxic ptomaines and leucomaines the digestive organs of an animal are. Why in the name of decency you will allow your market-men

to so humbug and doubly cheat you, I cannot understand. Demand that your poultry be "drawn" before buying it.

You see I am dead in earnest, and propose being as intensely practical. There is no use in mincing words.

I would like to curse and ridicule the corset, but it's no use. Why women will do so, is beyond the reason of man. It is hideous and deadly. Every man whom they think they are pleasing by crushing lungs, liver, and pelvic organs,—is in reality disgusted by the wasp-waist. Without it the medical profession would soon find itself much out of work, yet,—how we do hate it!

And so I could wander on with a thousand illustrations. Every article of dress, almost every article of food bought, the water you drink, has a medical significance. The way food is cooked and the way it is eaten, certainly have. The way you sit in reading, and how you hold your book, may mean years of ocular suffering and pain. Out of the myriad of things I could and would like to scold about, let me choose more specifically two or three and go a little into details.

Take the milk brought to your breakfast table. You may never have thought of this, but there are a hundred medical problems involved in the milk-supply. In not one of these vitally important problems have you taken as much of an interest as you have in two trivial and silly things. You have been worried and angered by the milk-man's knavery in watering his milk,—but if he used pure water, it was a small affair compared to other things. You should have seen to many things before the pump-handle. The second source of your vexation has doubtless been the price of the milk. You have been unwilling to pay ten cents a quart, when a little consideration would have shown you that the best pure milk from rightly-bred and properly-fed and well-cared-for cows cannot be delivered to you for less than fifteen or twenty cents a quart.

You have forced your dairyman to be slovenly, to give you dirty, diseased, and diluted milk. Having done so, you turn about and abuse him for what you have demanded and commanded. To start and reform in this matter, 25 to 50 families might join together and agree to give some farmer 15 or 20 cents for milk supplied under proper conditions. In Baltimore a sanitary milk company with a capital of \$100,000 has been formed, rigid inspection of the herds as to health, stabling, milking, and handling the milk being the objects aimed at. The herd must not be of the often tuberculous and diseased monstrosity, the Jersey, or other highly-bred cows, but the average animal of fair breeding. Many safeguards, all expensive, as to water, food, stabling, must be observed. The milk is not healthy at certain seasons of the cow's life. The animal must be bedded, curried, kept clean with as much scrupulousness as if she were a blooded race-horse. The cows that now secrete your milk, live, lie in, and all their lives are covered with filth. The milker is dirty, often infectiously diseased, and the milking often dirty. Persons recovering from scarlet fever, in milking a cow have been known to infect the milk and thus give the disease to persons using milk. The milk-vessels often have not been scalded. The milk should be brought to you, if possible, in an hour or two after the milking, having been quickly cooled, and kept at a low temperature, in sweet, hermetically sealed glass vessels, these immediately emptied, and immediately boiled, dried, and again scalded until refilled. The diseased, old, and impure milk you are now using should be sterilized, and you should look in some day at the cellars and back rooms of your milkman when he isn't expecting you, and see how the vessels are cleaned, or not cleaned, and what fine chances you have to give your babies tubercle-bacilli and poison them with the impurities of the simplest and most necessary of all foods. A thimbleful of Boston milk contains

on the average 2,335,500 bacteria, the Charleston samples over four million, the North-end only three-quarters of a million. These samples were taken directly from the wagons. But the average number of bacteria in grocery samples (when the milk stood longer and was dirty) was 4,557,000 per cubic centimeter. The lowest number in any sample was 30,600. In Halle, Germany, as many as 30,000,000 have been found. The average of American cities is estimated to be at least one million. For nursing infants requiring cow's milk, there are a great many special precautions and rules to follow to avoid disease.

But you will object that you have no time to attend to all these matters,—and quickly will come the answering question, “Why don't you hire and commission some one to do it?” “Oh! but we have a Board of Health to attend to that.” “Have you, indeed? And you don't pay its members a cent. Would you give your life to attending to drains, and cess-pools, and diseased milk, and bad meat, and preventing infectious diseases, and all that,—for nothing,—absolutely nothing?” Take milk again;—the only genuine reform will consist in systematic, scientific examination and ordering of the dairy farms and herds by public officers, well-paid and intellectually equipped. Typhoid fever, scarlet fever, diphtheria, tuberculosis, and perhaps other diseases, may be and are brought to your homes in milk. The evil must be attacked at its source. If the President of the Board of Health should go before Councils and ask for an appropriation for properly inspecting and regulating dairy farms, would he get it? You should not sleep to-night until you write your Councilmen urging them to make such an appropriation and many others also. Time and time again Councilmen were asked, by the Philadelphia Board of Health, for appropriations for city milk inspectors. There were ten or twenty millions of dollars for a marble palace for city officers, but not ten

dollars to protect the lives and health of the people. After a dozen years of struggle against the milkmen, their attorneys and friends, a wee-bit of an appropriation and a half-starved department with insufficient funds have been secured. The work cannot be half done, but already your milk is far better in quality, and there is somewhat less danger of deadly disease being in it. But ten or fifteen men are needed instead of five, and you should urge your Councilmen to provide them. If you estimate a human life at its average value according to average life-length and average wages, the community would save millions by appropriating money liberally for inspection of dairy farms, milk, etc.

The same lesson is taught by the need of meat inspection. Cattle with tuberculosis and actinomycosis are killed in this city and you are possibly eating the meat. Up to now, you, Mr. and Mrs. Public, would not vote a cent for stopping this. In Berlin they have nearly 300 men constantly employed to examine all meat offered for sale and pronounce upon its healthiness. In democratic Philadelphia, up to a few weeks ago, you had not one man. I learn that from January 1st, appropriation has been made for three inspectors. At least 25 are needed, so large is the city, in order to adequately do the work.

To show you how great is the need, let me tell you that within a month or two a few men, unpaid, and moved only by the public good, have with little search arrested 25 butchers for selling diseased meat and bound them over in \$800 bail for future trial. A frightfully aggravating fact about this question is that cattle shipped here for export to other countries are examined by the U. S. Government Inspectors, who condemn the diseased cattle, and will not permit their shipment. These diseased cattle, however, it seems, are quite good enough for you, so they are killed and you buy the meat that you are ashamed to ship abroad.

Was ever anything more opera-bouffe and disgusting at once? If you should ask why, as in the case of milk we must go to the dairy-farm, we do not again go to the *fons et origo mali*, and at the West stop the shipment of diseased cattle altogether, the answer is quick and sharp: Because you and your servant-masters, your legislators, have failed in your medical duty. Politicians have no time to attend to the welfare of the public business; they have enough to do to attend to their own—vulgarly called, “feathering their own nest.” The live-stock commissioners of Illinois have tried to prevent the sale of diseased cattle in the Chicago market, but immediately a billion-dollar Whisky Trust, with its billion distillery-slop-fed cattle, opposes, fights the commissioners in court, and beats them. The people must eat diseased meat or the Whisky Ring will not make so much money.

Frankly, one begins to wonder if democracy is the best form of government after all.

As to disinfection, you allow for a city of a million of inhabitants only enough money to pay the small salary of one man. But every additional agent you would add, say up to a dozen, would save you money in physicians' fees and undertakers' bills, and would save ten or a hundred times the salaries in lost time, lost health, and lost life.

No ward wants the Municipal Hospital for infectious diseases within its limits, and so there is a tendency to starve it out, and it is even advised to shut it up. In time of peace,—I mean when no epidemic disease is raging,—it has a limited but still very necessary usefulness, but let war break out, let an epidemic of small-pox or cholera come, and without the municipal hospital the calamity would be appalling. What kind of a general is he that dismantles his harbor-forts in time of peace?

The allusion to small-pox brings to mind the fact that during the last ten years (1880–1890) there have been in

Philadelphia 1950 deaths due to this wholly preventable disease. When a railway watchman by carelessness causes a collision, and a dozen persons are killed, you are justly horrified, but when 1950 people are killed by your carelessness, you are not at all concerned about it. Have you been vaccinated or revaccinated within the last six years? Are you seeing to it that every member of your family, your servants and friends, are revaccinated every few years? If you are not, do not blame the brakeman.

You perhaps think measles a slight ailment, that is not very dangerous, but 957 deaths from it are chronicled in this city in the past ten years. A large proportion of these deaths were needless, and could have been obviated by proper precautions.

Scarlet fever you know as a more serious disease, but you may be surprised to learn that it has caused 3713 deaths in ten years.

What will you say, then, to the more frightful fact that in the same time there have been 6583 deaths due to diphtheria?

The sad thing about the majority of all these deaths is that they need not have been. They were so much life wasted by carelessness. These are typical examples of infectious or contagious diseases,—diseases the germs of which are carried in some careless, negligent way from one sick person to another well person. Proper foresight and care would have prevented very many, if not most, of these cases of sickness and death. When such diseases appear in your family, you must at once isolate the patient, *i. e.*, prevent visits to the house, keep your children from school, and the entire family from visiting. You should not even use library books, as these carry to the next borrower the germs of the disease. Everything coming from the sick-room must be disinfected, and after the illness is past, the

whole room and contents must be disinfected according to the orders of the physician or of the Board of Health.

Typhoid fever, of which in Philadelphia 6607 in ten years have died, is often communicated by polluted water, and yet we are drinking water into which the sewage of several hundred thousand people has been drained. The wonder is that we have so little typhoid fever and other zymotic diseases.

It is better to resort to an adequate source of water where the population is sparse and likely to remain so, than to spend vast sums of money in removing impurities by filtration, etc. The tendency is for the water to become more and more impure as the population increases. Subsidizing reservoirs and filtration-works are a present necessity, but they should be so constructed as to be utilized when the source of supply is changed.

All filth should be removed as promptly as possible beyond the city limits without becoming a nuisance at the place of disposal. Sewers should be reconstructed in accordance with modern engineering practice. They should be self-cleansing and not depositories of filth. The Schuylkill below the dam, lying between two populated parts of the city, is the receptacle of a vast amount of sewage. For hours each day the sewage is held back by the tide, causing deposits in the bed of the river and foulness of the stream. At the receding tide, deposits take place on the low shores in the lower parts of the city, causing unhealthy effluvia. To remedy this and keep the river pure, all sewage now entering the Schuylkill should be carried below the city and discharged only at the ebb of the tide. Great sums of money under skilled scientific guidance should be spent in constructing intercepting sewers. While we are thus breeding the germs of disease with our wasted sewage, the land is being exhausted of phosphatic salts and

ammonia, the very element that we throw away with sewage. The nonutilization of sewage is both a financial sin and a moral sin. Bacteria, which the Bible calls "the armies of the living God," are produced by the unutilized sewage. When we do wrong, God has a multitude of ways of punishing us, and among these the beneficent microorganism is most powerful and patent.

The cremation of garbage is a much-needed sanitary reform. The present system causes great nuisances by improper disposal, and by collecting swine within the city limits.

Intramural interment is practiced to a large extent. It should be prohibited in built-up parts of the city, and after a number of years an opportunity should be offered to remove the bodies, and the burial grounds should be turned into parks.

An important sanitary reform is the establishment of mortuaries throughout the city for the benefit of the poor and others. The poor keep the bodies of deceased relatives in their crowded apartments in the midst of the living. Bodies could be taken to the mortuaries to await the funeral service, and friends could assemble there, dispersing after the ceremony, and thus save the expense of the funeral procession as well as relieve the home of serious disadvantages.

People should be instructed in the management of infants, especially during the hot season, and such instruction would be the means of reducing infant mortality. Such institutions as the Children's Country-week and the Sanitarium, are of great aid in this direction. More than 125,000 children and care-takers visited the Sanitarium in the summer of 1891. A great amount of sickness, suffering, and death were doubtless prevented by this means, and it is worthy of most liberal support.

A smooth, impervious, noiseless pavement is greatly

needed. Its advantages would be cleanliness of surface and soil, comfort in riding, and especially riddance of the noise-nuisance so wearing on the nerves of most people, and that beyond question is lessening the average duration of life.

We have now thousands of acres of parks, miles away from the crowded city, parks for the rich, or that the poor can only use a few days of the year. What is sadly needed is many small parks scattered all through the denser parts of the city, little parks for the *daily* use of children, and so near the houses of the poor that they can be reached in a few minutes.

Rapid transit should be urged as an important sanitary measure. Tired workmen and women and children are obliged every day to stand in crowded cars while breathing lifeless and even fetid air. Disease is constantly being propagated under these conditions.

Everybody should protest against the common, disgusting, and unnecessary habit of spitting in public places, public vehicles, rooms, etc. It is now indubitably established that the sputum of consumptives is a great means of conveying the bacilli to others; soon dried, the dust is carried by the wind or by the dress-trail to lungs that are the breeding-ground it seeks.

Public bath-houses for "the great unwashed" are urgently needed. Not only bathing pools for use in the summer time, but especially public bathing establishments, where the year round the poor can bathe for a small sum. I do not understand why some moderately rich man does not immortalize himself, and justly, nobly so, by constructing people's baths after the models so successful in New York.

There should be established, also, public wash-houses, where for a moderate sum the poor can take their clothes and cleanse them by their own labor and with the aid of

labor-saving appliances. It encourages cleanliness, relieves the family of the disadvantages under which they labor in their crowded houses, etc.

I have left, for the sake of emphasis, the consideration of tuberculosis or consumption. Fix it in your memories that in Philadelphia, in ten years, 27,142 people have died of this disease. There are many ways in which the tough and prolific germs of this most deadly of all diseases are conveyed from one person to another. There can be little doubt that the milk from tuberculous cows, or by its contamination in handling, is often the means of the transfer. I have emphasized the milk-danger enough. The meat from tuberculous animals may also bring the contagion. Hence the urgent necessity of the thorough cooking of all meat. However fashionable it may be to eat under-done meat, do not you be thus fashionable. There seems to be little danger of the transfer of the bacillus from the phthisical patient to another person except by means of the sputum. This should never be allowed to dry. It should at once be disinfected or burned.

But the preparation of the soil is quite as important as the planting of the seed. There are probably thousands of the bacilli of consumption in the lungs and digestive tracts of each of us this minute. We are breathing and eating them every day. But they germinate, grow, or live only in certain soils; they develop only in the lungs and organs of certain persons. Just why this is so, is a little hard to explain, but beyond question, besides hereditary tendency thereto, it is in great part due to undeveloped lungs, insufficient chest-exercise and development, inadequate oxygenization of the blood. We cramp our lungs with tight clothes, sit too much, live too much indoors, and all that.

Almost all wild animals die of consumption in captivity, but never die of the disease in their native habitat. We

are all wild animals in captivity to civilization. According to the researches of Cornet, almost fifty per cent. of all deaths in prisons are due to tuberculous disease. Outside of prisons only about ten per cent. die of this disease. The inference is obvious. A famous old physician never failed to cure his consumptive patients if he could get them to take his medicine—twenty-five miles of horse-back riding every day. Consumptives get well when sent to high altitudes or to mild climates, where they live in the open air and where respiration with chest-expansion and exercise is inevitable. The lesson is clear: dress and train the young in more natural ways of breathing and living; let there be less schooling, less study, and less reading, more light gymnastics, more open-air life, and more healthy animality.

I have hardly time even to mention the evils that are due to ill-ventilation of houses, of sleeping-rooms, and especially of the theaters and public halls. I cannot touch the evils connected with street-cleaning or noncleaning. I wish I might also pitch into the shame of the adulteration of medicines—a large proportion of the drugs of the ordinary drug-store being impure. I am also prevented from discussing the harmful effects on health and life of certain handicrafts, methods of work, etc.; the subtle and injurious effects of certain trade monopolies, trusts, and “combines,” in raising the price of many necessities of the poor, *e. g.*, of McKinleyed wool, which means shoddy wool, cotton instead of woollen clothing, which means disease and increased death-rate. Failure in school hygiene is accountable for much ill-health in after-life; the selling of spectacles by opticians without medical advice and prescription,—a thing that should be forbidden by law,—is doing vast injury to the community. And, finally, more important than any of these things, I regret being forced to omit discussion of the blood-curdling horror of drink,

dealing death everywhere, corrupting the bodies, brains, and souls of men, shortening and hardening the lives of us all, whether drinkers or not.

The death-rate is the registering index of the whole matter, though figures of this kind have to be used with intelligence and judgment in order not to tell lies. In New York three persons more per thousand die every year than just over the river in Brooklyn. Other things being equal, the greater the crowding, the greater the death-rate. Bearing this in mind, weigh well the fact that with all the frightful misery and crowding and squalor to be found in London, a city of five million inhabitants, its death-rate is nevertheless about four per thousand less than that of New York. This means that if London had the same mortality as New York, 20,000 more people would die each year than do die.

When we come to Philadelphia, we at once find the excellent results due to the fact that ours is a city of homes; the crowd-diseases are lessened, and our death-rate is four per thousand less than that of New York. If our mortality were the same rate as that of New York, 4000 more of our citizens would die each year. Our elation, however, gets a sharp check when we think of what should be, and compare our unnecessarily high mortality with London's splendid record. With five millions of inhabitants, instead of our one million, and despite all the unsanitary disadvantages, London, by heroic sanitary diligence, has brought her death-rate below ours. It is no exaggeration to say that instead of our death-rate being 20.66, it need not, in the present state of medical and sanitary science, be over 17. This put in plain words means that by our culpable, nay, criminal, neglect we are killing, needlessly killing, something like three thousand inhabitants of our city each year.

Let us estimate the financial value of this loss. The

average rate of American wage-earners is about one dollar a day. This is a low estimate. That is, you can buy the labor of the average American citizen for about \$300 a year. According to insurance life-tables, the average length of our life is about forty years. Our working or productive period is about half that time, and the average market value of one of us is therefore twenty times 300, or about \$6000. Put up for sale, one of us is worth \$6000 in the labor market. Now let us allow of the 3000 killed by our own carelessness and neglect, one-third of the number as having passed the laboring age, and therefore to be thrown out of this accounting. The remaining 2000 Philadelphians sacrificed to short-sightedness are thus seen to be worth in the labor market \$12,000,000.

But this is by no means all the loss ; for every death, Dr. Farr estimates that two persons are on an average continuously ill, *i. e.*, there are two years of sickness for every annual death. With the 3000 needless deaths, therefore, there are also in Philadelphia each year the equivalent of 6000 years of needless illness. Estimated in money values, this means in lost time alone \$1,800,000, besides the doctor and druggist bills, etc.

And yet, when the city fathers are asked for a few thousand dollars for meat-inspectors and milk-inspectors, for new and necessary sewers, for an unpolluted water supply, or for other measures of preventive medicine, the request is refused, or acceded to with such crippling stinginess as to be ludicrously inadequate.

Had I not been fearful of the charge of exaggeration, I might have said that if our present knowledge of sanitation and prevention were only applied, our death-rate might be reduced by one-half.

Extend our calculations to include the 60,000,000 of people of the United States, and you will realize that the General Government needs a great and powerful Department

of Public Health, with a Cabinet Officer at Washington, and with power and appropriations to meet the exigencies and dangers to life and health of our people. Such a department would at once save the people more than the entire expenses of the government. Write your representative to-morrow to help forward its passage. A bill to provide a department of this kind has been introduced. As a little example furnished by one of our own States, Dr. Baker, of the Michigan State Board of Health, estimates that in his State his Board has saved over 100 lives a year from small-pox, 400 lives a year from scarlet fever, and nearly 600 lives a year from diphtheria,—besides many more from other diseases and not capable of accurate estimation.

Are you shocked that I should estimate the value of human lives and suffering in dollars? It is quite as little to my liking, I assure you, but it would seem necessary in order to arouse attention to the truer consideration of the inestimable spiritual value of life, health, and happiness. By this means I only wish to make it plain to the crudest and most brutal motive that preventive medicine "pays." The splendid wisdom of the English, displayed in the continuous decline in the general death-rate (now about 18 per thousand), always exactly proportioned to thoroughness of vaccination, sanitation, drainage, pure food and water-supply, etc.,—this indeed is proof beyond question that it pays. These financially shrewdest of all men would not spend money like water for these things if the return in hard cash as well as life were not indubitably evident.

In every city a thousand times more necessary than a City Hall is an Institute of Practical Preventive Medicine, an organization wherein should be brought to a focus the best science and the most devoted zeal to guard the health and physical well-being of the people, bending every energy to stamp out zymotic and unnecessary disease, to alleviate

and render less tragic unavoidable suffering, to brighten and beautify and lengthen the lives of all. Since pity and religion awakened in men's mind, the aim has been to relieve the existing and produced evil, but science and intellectual prudence now dictate that we stop evil causes, forefend bad results, and strike at the sources of ill. If Christ, who according to the Gospel healed the sick and brought the dead to life, should come among us to-day, he would be an exhorter and helper in the work of preventive medicine. To prevent a death is just as great a work as to bring the dead to life; to prevent sickness even greater than to cure it. Civilization demands of us prevention of evil by all the methods of social cooperation, scientific precision and prevision. If you do not take a living interest in these things you are no Christian, you do not love your fellow-men and the coming generation. The religion of civilization must add intellect to sympathy. Science is not antagonistic to religion, it gives it eyes and hands and machinery, whereby to realize its desires. True pity, intelligent pity, means prevention. Up to now the physician's work has been to cure sick persons, but from now on our greater and sublimer task is to prevent sickness. In this you and I must aid. This is "everybody's medical duty."

THE POWER OF WILL IN DISEASE.*

After a hundred years of history and education in scientific medicine, and in a country where shrewd common sense has been developed in the most backward-looking mind—at such time and under such circumstances it would have seemed impossible that the incurably sick, the paralyzed, and the maimed should by thousands flock to a priest to be cured of their diseases. The newspapers say the immense depot at Pittsburg has of late seemed like a hospital, filled as it has been with the poor, unfortunate invalids seeking Father Mollinger's supernatural aid to make them well. The Father anoints and blesses, and the young man who "had not walked since childhood" upon command goes unassisted "from the altar-rail to the rear of the church, to the amazement of the vast audience." Though the report says the great majority are sadly disappointed—the squarely impossible cannot be done in these times—a number are found that, with functional affections, under strong emotion, exhibit a change, or an increase of strength, so that the belief in "the power" is kept living.

What is it that makes Father Mollinger, Christian science, faith cure, medical spiritualism, and to some extent homeopathy possible in the nineteenth century? Were there absolutely no element of truth in these reported "cures," even the dullest dupe would come at last to some consciousness of the hocus-pocus. The manure of the soil nourishing these delusions is a truth too often ignored and neglected by scientific medicine. It is the truth of

* From the *Medical News*, June 27, 1891.

the power of the emotions, of the will—of the spirit, if you please—over the flesh; of life over the beginnings of disease, and even over disease and death itself. Races and nations differ greatly in their power of resisting and overcoming disease, simply by reason of the characteristic attitude of the will and the disposition of the patient toward the physical illness. Just so do all, even brothers, differ in the same way. Thousands are physically sick because mental resolution and spiritual domination is weak and illogical. This is strikingly true in reference to the beginnings of disease. The secret of continuous good health does not always consist merely in physical resistance or robustness, but in sharply conquering the subtle beginnings of corporeal abnormality by pure will-power. There are two homologues of this power that illustrate it exactly. Who has not seen whimsicality, crankiness, and oddity by self-indulgence slowly degenerate into monomania, and even into downright insanity? And, again, who can doubt that in the commencement many such persons are perfectly conscious of the abnormal tendency, and are, moreover, perfectly capable of *not* doing the ridiculous or self-forgetful things. They are at first driven by no imperious necessity. It is precisely so when one gives way to immoral courses of life. At first the voice of conscience is clear; by and by control is lost and the voice is entirely silent. The analogies obtain in the matter of health. The adage, "Resist the beginnings of evil," holds also here. All disease begins subtly, almost insensibly, as chill, lassitude, malaise, etc. Caught at this stage and fought down by a virile volition, that which by self-indulgence would have proceeded to genuine fever and illness may often be resolved into routine normality of health. A brisk walk of five miles in the teeth of exhaustion and weariness has saved many from severe illness. And so in types of disease that are, if one may so speak, more organic. The

fact cannot be disputed that many who have believed themselves incapable of walking, under powerful emotion, their own will being supplemented and "relayed" by that of another, do really find that they can walk a little. Our confutation of the priest's supernaturalism consists precisely in this proved power of the will. Doubtless orthopedic appliances are often given patients who need only resolution, encouragement, and repeated trial in order to develop by exercise the strength that the crutch really conceals or neutralizes. In the sick-room every experienced physician knows how much depends upon the morale, the resolution of the patient, and how even death and life may depend upon the will. All this, when we read it, seems trite enough, but its significance is lost sight of in the battle of rival theories of disease, and to some it must seem the froth of nonsense. But the practical lesson of the very obvious truth consists in the simple duty of arousing the will to self-confidence and corporeal domination. As has been well demonstrated, the best cure for the most outrageous hysteria is mental and volitional control—supplanting the patient's diseased imagination by a healthy one—true faith-cure in a legitimate and genuine sense. The puppets of fashionable automatonism are prone to run to the doctor for every ache, real or suspected. To indulge them in their folly sometimes seems to the physician not without a certain worldly excuse. But if a higher ethical ruling is adhered to, duty will counsel encouragement of prophylaxis and hygiene; and among the means of forefending disease an energetic domination of will over the body is often the most vital and important.

THE APOTHEOSIS OF HYSTERIA AND WHIMSICALITY.*

One of the functions of a medical journal is to notify its readers of the appearance of new and important medical works, and so deeply are we impressed with the transcendent importance of one such book recently issued, that we believe we are doing a great service to medicine by a somewhat extended and free advertisement of it. It is by W. A. Dewey, M.D., a late professor of materia medica, an editor and associate editor of numerous medical journals, an author and associate author of several medical works, a member of many medical societies. The last title the learned author gives himself on the title-page of his book is simply this: "Homœopathic, etc., etc.,"—which reminds one of a drug catalogued by the New York homeopathic druggist, Swan, as "Omnia." The book to which we call especial attention is entitled: "Essentials of Homœopathic Therapeutics, being a Quiz Compend upon the Application of Homœopathic Remedies to Diseased States," and is published by Bœricke & Tafel, Philadelphia, 1895.

"One of the grand cardinal features of homœopathy," says the author in his preface, "and one little understood by the allopathic school, is the fact that any drug in the entire homœopathic materia medica may be a remedy in any diseased state. It is, therefore, evident that the preparation of this work entailed no little difficulty," etc. In view of the infinite multiplication of "remedies," and of the numerous different "potentizations" of each, together with

* *The Medical News*, March 9, 1895.

the literally bewildering multiplication of "symptoms" or "provings," this modest qualifying reservation is very appropriate, as otherwise all the books that have ever been printed could not contain the possible "Application of Homœopathic Remedies to Diseased States."

Before passing to the subject-matter of the volume we cannot forbear a word of criticism as to the strange fatality that makes it impossible for our homeopathic friends to write sentences according to the fundamental rules of English grammar. In reading this remarkable work, for example, we seem to hear the echoes of some half-forgotten *patois* in which philologic crudities, barbarisms, and grammatic impossibilities vie in vain with pseudoscientific whimsicalities and medievalisms. The very contractions used of the names of drugs make one smile, as, *e. g.*, croton tig., carbo veg., Lyc., carbo an., Kali bich., etc. How can one who knows that the word *blepharospasm* itself means twitching of the lids speak of "a blepharospasmus twitching of the eyelids"? To one not conversant with occultism, the works of Mme. Blavatsky, or the strange use of language by the homeopaths, a large number of the sentences are absolutely devoid of meaning. One wonders how symptoms can be called "female symptoms" or "male symptoms," what sentences without verbs can signify, what the personification of drugs betokens, etc. Of these grammatic peculiarities, of which certainly every second sentence is an illustration, we quote a few examples that have attracted the attention:—

The sensations are throbbing, which is intense and sudden, and the pains are apt to cease as suddenly as they appeared.

Stramonium has visions of animals coming toward him from every corner.

It is a hoarse, croupy cough, but withal a loose edge.

The patient clutches the air; sometimes a stupor, which, if aroused out of, they strike people.

The child appears to have but one bowel extending from mouth to anus.

The diarrhea of Thuja is a chronic diarrhea traceable to vaccination, forcibly expelled like water from a bung-hole.

What drug has nausea at the thought of food? even mention food and he vomits.

Gulping up of burning water.

The patient is excitable, restless, and fidgety. They are awkward and clumsy.

Where does Kali bich. come in?

What drug has a great deal of depression about his chest, is tearful and discouraged, and fears that he will go into decline?

Patient thinks she will go crazy, is suspicious, has visions of rats, etc. ; is conscious, but can't help it.

Stannum has characteristically falling of the womb during hard stools.

In glancing through this volume one is struck by the almost maniacal reveling in the nasty. Every possible discharge or excretory product of the body (our author would call it "a secretion from the body") is described, with a vividness of language and with a fond enumeration of the morbid varieties and of their unexampled filthiness; the catalogues of Rabelais pale before the telling word-pictures of our author. This is undoubtedly due to the habit of treating symptoms rather than to a distinctly Rabelaisian type of mind, however. This fact may also explain why *spermatorrhea* has the consideration of nearly three pages, whilst *peritonitis* has but half a page; why diseases of women require nine pages, whilst tuberculosis and "phthisis" combined require but three.

But this enumeration of symptoms—what awful absence of the sense of humor does it show, the perfect solemnity with which this apotheosis of hysteria is set down! A person, we suppose, has taken an infinitesimal amount of "carbo veg.," and whatever morbid whims pass through

his fancy for days are supposed to be "provings" of the drug, although any amount of carbo veg. in the shape of toasted bread may be eaten at other times.

Thus "*phosphorus* has evening hoarseness, while *Causticum* has morning hoarseness," "*lilium* is worse in the afternoon, *sepia* in the forenoon." One drug produces a sensation in the right arm, another in the left arm. One produces headache over only the left eye, or pain in the left ovary, headache upon one side of the head ("the pains following the course of the sun"), etc.

The explanation of a number of national traits is suggested by the assurance that among the mental symptoms of gelsemium is mentioned, "does not seem to care whether school keeps or not;" among those of Platina, "the patient is proud and haughty; looks down upon everybody with disdain; everybody seems beneath her;" among those of Baptisia, "he thinks he is scattered about, and he must move to get his pieces together again;" in children chamomilla produces the very human trait: "want to be carried about, and want different things, and when they get them throw them away dissatisfied." Our neighbors, the Britishers, have often wondered why we Americans "like to sit with the feet on the table." They may now understand that it is due to "the effect of carbo veg. on the liver." Profanity, it would logically seem, might be lessened by restricting the sale of nitric acid.

In private practice we have often been told by patients that they had been given medicines for cataract for years by homeopathic practicers, and lo! here, Anno Domini 1895, is phosphorus commended therefor!

It is little wonder that the animosity against the "allopath" is so great that a drug having a general exorcising or purifying effect is recommended as "the first remedy to use if the case comes from allopathic hands."

Quotation is better and more just to the talented author

than any setting forth of his teachings in our own poor words. We, therefore, give free permission to scissors, to wit:—

What drug has amenorrhea from getting feet wet?

What drugs have backache worse while sitting?

Arsenicum lacks the tingling of *secale*, and wants to be warmly wrapped up. *Secale* wants to be cool, and lacks the anxious tossing about and restlessness of *arsenicum*.

Mention three drugs having colic from a fit of anger.

All muriates have crumbly stools.

What drug has convulsions in children from rich food?

What drug has a cough that is worse when strangers are present?

In the diarrhea of aloes the patient loses confidence in his sphincter.

Arsenic wants little and often, *apis* thirstless. The bloating in *apocynum* is on the side on which he lies. *Arsenic* in the extremities. *Apis* under the eyes.

What drug has pain in the right eye as if it were pushed out of the head, worse near a warm stove?

What are the symptoms to China in dyspepsia?

What drug especially desires oysters?

What drugs have the symptom that the patient has to loosen the clothing after eating?

When a hemorrhage is due to a strain or misstep cinna-momum is to be given.

Belladonna is relieved by being propped up in bed, while *sanguinaria* has relief from lying down. *Belladonna* was not so marked.

What drugs have headaches relieved by copious urination?

What peculiar symptom has Oleander in the head? Headache relieved by looking sideways.

Arsenic has hypertrophy of the heart, resulting from climbing high places.

“Castoreum, the secretion from the beaver” (sic), is recommended for “women who are pretty near the hysterics.”

Where do the pains of *Croton tiglium* go upon nursing? To the back.

What drug has the symptom that the patient predicts the hour of death?

What drugs have hasty speech and hasty drinking?

What symptoms has *anacardium*? It produces a weak memory; he imagines he hears voices, and another condition is a propensity to swear; it is mental condition, and it does not exist as a condition of low morals.

What other drug produces a disposition to swear? Nitric acid.

The *staphisagria* child is impetuous and irritable, reminding one of *chamomilla*.

What are the mental symptoms of *sepia*? The patient is low-spirited, cries readily; weak memory; there is sadness and irritability; it will not do to find fault with her; there is also perfect indifference, especially to household affairs and to her own family; the patient is easily offended; she dreads to be alone, wants company, but has an aversion to her own friends.

How is *Sepia* distinguished from *Pulsatilla*? Both have weeping, anxiety, peevishness, and are ill-humored; but *Pulsatilla*, only, has the mild, clinging disposition calling for consolation; she makes her grief known and asks sympathy. The *Sepia* patient is worse from gentle exercise, but is relieved by violent exercise.

What drugs have the symptom that the patient has to think how words are spelled? (*Spelling-reformers will take notice!*)

What are the mental symptoms of sulphur? Patient fears she will not be saved; there is anxiety about her own soul, but perfectly indifferent about the souls of others.

With *Hepar sulph.* the patient is especially sad in the evening, and does not wish to see members of his own family. (*And thus at last is an explanation and a cure assured for a sad social custom!*)

With *antimonium crudum* the crossness of children is increased by washing them with water.

With *gelsemium* the patient does not seem to care whether school keeps or not.

What is the Graphites temperament in general? Sad, fat, fair, and constipated.

What drug has the symptom that the soul feels as though it were freed from the body?

What drug has special action on the right wrist?

The *Natrum carb.* patient gets very nervous during thunder storms and hides in the cellar. This nervousness is said to be due to the electrical condition of the atmosphere acting on such patients.

Pulsatilla is mild, tearful, and whimsical. *Sepia* is depressed, easily excited, and irritable. *Pulsatilla*—blondes. *Sepia*—brunettes.

Medicine is a serious study and the medical life is proverbially a solemn one. Perhaps we have quoted too extensively from our valued author, but his teachings we trust may be found at least temporarily a good "regular" dose antidotal of the gloominess of our calling. The richest and most perfect humor in the world is the unconscious variety, that wherein the most profoundly earnest joker dreams least of all things that he is producing a work that will inspire most uproarious laughter in thousands of readers.

But after the laugh the return to work! After the fun the payment of the bills! Thereupon come the indignation and the disgust—the thought that it is for the encouragement of this sort of nauseating drivel that our aristocratic society gives "charity balls;" for this that our legislators vote hundreds of thousands of dollars of the people's money; this gibbering ghost of medieval medicine it is that an intelligent and discriminating people call the "new school"!

CHARACTER.*

In a general way, it is doubtless true that the great mistake of men, of all men, consists in the failure to estimate the value of character. Everybody is prone to put the good of life in something gained or done, in knowledge, in some objective thing, as wealth, power over men, ability to make much of self, etc. But apart from this general injudiciousness of mankind there are certain ages or peoples which thus err especially and grievously. It is an error, for example, markedly common in a young nation or people, when great public works are to be carried through and tremendous energy is to be put forth or utilized. The man who can win battles, who can plan and build a railroad, who can procure needed legislation, organize and manage manufactories, he is the man people want, and they care little or not at all whether he be honest, pure, high-minded, unselfish, or whether he be the reverse of these things.

By and by, however, with a better civilization, there comes the knowledge, gained by bitter experience, that the emotional and moral make-up of a man, his character, as contradistinguished from his ability to do things, have as much, or more, to do with our trust of him, with his "success" even, as his ability to do things. As more and more men compete for the same office or work to do, it is found that the larger type of personality, the man who has character as well as ability, is the better man to endow with trust and power.

* From the *Medical News*, December 1, 1894.

It is just in such a condition that we Americans now find ourselves. We have heretofore been content to give over our cities, States, manufactories, banks, and institutions of a thousand kinds to the persons who by hook or crook could get hold of them, or who could do the work required. Now at last we are finding out that upon the quality of a man's personal character, in a word, upon his morality, will depend the success or failure of the thing done, quite as much as or even more than upon executive ability, knowledge, or will-power. It is not the most expert bookkeeper or cashier that is the best one to put in charge of millions of dollars, but it is the most loyal and honest. It is not the best, most successful administrative ability that now makes the best administrator. In every walk of life, from governing the nation, the city, or the push-cart, we are daily admonished that the perfection of a man's work depends upon the honor and honesty of the man's character. The power of the mere doer, the knowledge of the knower, the skill of the executor, are growing less important, and are coming more and more to depend upon how the thing is done, upon honor and conscience in the doer. In the long run nowadays the man, honest but stupid, if we must drive the comparison to its rather absurd extreme, gains upon the brilliant scoundrel. But as almost no American can be called stupid, so it follows that the combination of conscience with ability now constitutes the highest type of man.

These rather trite truths have their apt and striking application to medicine—but with the proviso that we are hardly yet beyond the first stage of the evolutionary process. We have hardly begun to be more than half-conscious of our barbarism of caring nothing for a physician's character, providing he is said to cure disease, or wins "success." The consequence is that we have plenty of medical Tweeds and Tammanies, our thousandfold quack-

eries, etc., all dependent upon the custom of not considering a man's character, but only considering his ability to get official position, or a big practice, to write a book, to deliver lectures, to attract the public eye, etc.

Now we contend that it is high time that we undertake the real work of genuine medical civilization. Sincerity and honor are as much needed to make a good physician as trickiness and smartness. The smart man, who is also a trickster, however infernally smart he may be, is henceforth to be more and more avoided. Whatever he says or does he is only after self, and medicine is his ladder and tool. The man whose laboratory-experiments are untrustworthy, who is always appearing in the daily papers under some pretext or other, whose language is habitually a nasty mixture of slang, oaths, or vulgarity, whose private life is filled with trickery and politics—such a man, however “sharp” and “able,” is no longer fit to be a teacher of young men; patients should not be sent him, and office should not be given him. A man who makes, derives profit from, or indorses secret preparations should be practically disowned by his fellows in all ways by limiting his power. A man who fleeces the public, and thus injures the reputation of the profession by charging fees farcically outrageous for inconsiderable operations needs to be incontinently squelched. The man “with a pull,” who hoggishly gobbles up and uses for selfish purposes dozens of hospital-positions, excluding other quiet, modest men of equal ability, nay, even holding them in menial subserviency—such men should be avoided by trustees and other dispensers of power. The ringsters who unite into a clique for mutual advantage and profit by all the scheming and politically vile means in their power—they also need disgracing. The huckster, the schemer, the politician (usually he is one person), is to-day the worst enemy of medicine.

He corrupts at the source ; he is the big quack in the better disguise.

In many ways we need to begin the task of discrimination and of rewarding men of modesty, honor, gentlemanliness, and conscience, instead of neglecting them and filling positions with the schemers, the self-puffers, the newspaper-doctors, and all the "pushers" who use medicine as a mere tool to further self. This is because the method of learning a diagnosis, or of treating a patient, or of doing anything, is often as important as the thing itself, and is indispensable to correct results. The best therapist, the best curer of disease, is not he who only knows best, but he who is most conscientious, sympathetic, and self-forgetful ; the best surgeon is not the most expert operator, but he who will not operate when operation is not necessary. The most successful physician is not he who has most patients and makes the most money, but he who most successfully cures disease. The best teacher is not necessarily he who talks the glibbest or who is the most "popular," but he who helps his pupils to learn the best and most accurate knowledge, and who inspires them with the enthusiasm for knowledge and for the relief of human ills.

Are you a trustee or a dispenser of office or of power of any kind? There are hundreds of self-respecting, earnest, capable, honest, quiet men who deserve your consideration, and who will fill the position you have to give far better, more to the honor of the profession, more to the good of humanity, than the "hustler," the famous infamous fellow who fills your mail with splendid testimonials of his attainments and capacity, and who cronies with newspaper-reporters, "works the club-racket," and is as careless of medical ethics as he is careful of self-advancement.

If you are no appointment-giver you at times require a consultant. Do you believe you or your patient will

secure better advice from the business-doctor, the consultation-hunter, the man with much fame, savory or unsavory? Or, is it not more likely you will do better by consulting with one who studies deeply, who is most scrutinizing, accurate,—in other words, whose acts and life bespeak intelligent conscience as the ruling characteristic, and not egotism, “business,” or love of fame. At least, you are a member of some medical society. Can you not help to refuse office to the office-seeker and the politician? Can you not detect and estop the ringsters when they try to refuse membership to the worthy, and when they try to “run in” the unworthy? Blackballing the good man, receiving the bad man, are too common as they are too frightful mistakes.

In no way can we mold the future and make the world better for our children, freer from disease, than to encourage the formation of noble medical character by helping to office and by rewarding and consulting with those who are seeking to keep their characters pure and clean. In no way are we more recreant to our trust than by giving attention to the advertiser, by helping a despicable character to power simply because he has enormous effrontery and egotism coupled with more or less of flashy superficial medical knowledge and fame.

THE MODERN FRANKENSTEIN.*

Some time ago I was present at a lecture wherein the speaker, in alluding to a certain skull, incidentally spoke of it as belonging to "the criminal type of crania." A brain that had been hardened either by world-wear, by chemical action, or by the lecturer's logic, was also alluded to as belonging to "the crime-class." There was in all this a sort of "taken-for-granted" air of assurance that aroused in me a multitude of questionings and doubts. The gentleman was an adept, I, a novice, and I felt I ought also to adopt the "already settled," "it-goes-without-saying" air with which he calmly put aside what I had supposed the inexorable laws of nature and of sociologic evolution. Have we indeed "changed all that," I said to myself,—and I went home seriously to ask myself when a man becomes an embezzler or "boodler," kills his mistress, guzzles too much whisky, gets cranky or clean daft, or kicks his wife, if it is all because his "atypical" skull or brain determined his atypical conduct. It is, indeed, true that we must always hold ourselves ready to reconsider the truth of such old bits of bigotry and dogmatism as that two and two make four, or that it is advisable for most of us to take food in order to live very long. In this modest and submissive mood I asked for instruction. I read without prejudice whatever I could find on the question by alienists, neurologists, cerebrologists, craniologists, and penologists, and I regret to say that I have found in

* Read before the Medical Jurisprudence Society of Philadelphia, May 14, 1889. Published in the *Open Court*, 1889.

my reading that the medical profession is pretty generally leaning toward the view that not only insanity but also crime is the result of disease. All through this literature I have found the terms, "Homicidal Mania," "Moral Insanity," "Inheritance of Criminality," "Insane Criminals," "Moral Anesthesia," "Negro, Simian, and Fetal Peculiarities," etc., etc.

One writer says that "inebriates are grown and manufactured, as much so as cotton and wool, and the machines to work them into fabrics;" another says, "the true thief is born, not made." "The passion for gambling may be acquired by the fetus *in utero*" is another dictum of a famous writer. "The brains of criminals exhibit a deviation from the normal type, and criminals are to be viewed as an anthropological variety of their species," says Benedikt, the Moses of this "peculiar people." The popular plebifications of so-called "Science" concerning "A Family of Criminals," "The Famous Jukes Case," and the everlasting reappearance of the six-fingered and six-toed gentry in the devil's popular bible, the Sunday newspaper,—such things as these make us wish that sterility had also been an inherited quality of the mothers of certain newspaper "scientists" and writers. To be brief, let us crowd the matter into a sentence and say, that the tendency of this school is to wipe out the distinctions between morals and medicine, obliterate the line between sanity and insanity, and exonerate every criminal from responsibility on the assumed ground of a special neurosis or a defective brain. This is the *tendency*, more or less plainly expressed or implied, but, at least, necessitated by the premises and by a frank logic.

But is it either a good tendency or a true conclusion? Is it either good science or good sense? Is it good morals? I believe it is neither, and these are some of my reasons for so disbelieving:—

1. It is asserted that criminals and the insane have "defective, retarded, and aberrant brain development," and that therefore their crimes and follies are anatomically or pathologically necessitated. The common conclusion of the studies of Benedikt*, Badik†, Ten Kate and Pavlosky‡, Corre and Rousel§, Marro and Lombroso||, Lombroso¶, Varaglia**, Mills††, Tenchini‡‡, etc., is that the brains and skulls of these classes are atypical or unsymmetrical. This statement is both true and untrue. I mean that as an abstract statement it is probably true and may be willingly admitted. But I wish first to illustrate the spirit of many of these inquiries by a quotation from Benedikt, who frankly says of his observations that "they were collected as the result of an *a priori* conviction that the criminal is an overloaded individual having the same relation to crime as his next of blood-kin the epileptic, and his cousin the idiot, have to their encephalopathic condition." Others have been less blunt in avowing their prejudice, but it seems to have governed the studies of most. Moreover, if you look for atypism you will certainly find it. Why? Because it is to be found in criminals and the insane just as well as in other good folk. It may reasonably be doubted if there is a perfectly symmetrical skull or perfectly typical

* "The Brains of Criminals."

† Summary in *Phila. Med. Times*, Vol. xv, 1884, p. 50.

‡ "Sur quelques Crânes," etc., *Rev. d'Anthrop.*, Paris, 1881.

§ "Etude d'un Serie de têtes," etc., *Rev. d'Anthrop.*, Paris, 1883.

|| "Reflessi tendinei," etc., *Arch. di Psichiat.*, Torno, 1883.

¶ "La pazzia Morale," etc., *Arch. di Psichiat.*, Torno, 1882. "Fosso occipitali," etc., *Arch. di Psichiat.*, Torno, 1883. "Sul mancinismo motorio," etc., *Gior. d. r. accad. di Med. di Torno*, 1884.

** "Note Anatom.," etc., *Arch. di Psichiat.*, Torno, 1885.

†† "On Arrested and Aberrant Devel.," etc., *Jour. Nerv. & Ment. Dis.*, September, 1886.

‡‡ "Note sur la crête," etc., *Actes Cong. Internat. d'anthrop. Crim.*, Rome, 1886.

brain in the world. What do we mean by typical? Correspondence to an ideal perfection and symmetry. But such actualities nowhere exist. No man ever saw a symmetrical leaf or tree, a symmetrical skull or brain. And yet despite their determination to find it, if possible, Badik and others are forced to confess that but a part of their criminal skulls and brains were "aberrant," "unsymmetrical," "negroid," or "simian." It may be said that the contention of the more moderate is that in the classes considered there is greater atypism than in the average member of the community. But that is not proved. The conclusion of the investigations so far proves only that a certain number of criminal brains and skulls are atypical. Very well! But what about those that, so far as discoverable, are normal? And what about those sane folks with atypical skulls? The Greek skeptic shown the offerings of rescued shipwrecked mariners who had in the hour of peril devoted these presents to the god, calmly asked, where also were the offerings of those *not* saved. No large, careful, and scientific measuring of the sane and moral has been made and compared with that of the insane and criminal. Clevenger doubts if any differences could be found in such a comparative examination. Science means prevision, but if the brains and crania of the ten last dead from the State Prison, the Insane Asylum, and yesterday's railroad disaster were gathered, there is no expert or set of cerebrologists in the world could either put the thirty brains back in their proper cases or designate with any certainty to what class of the three any one belonged. No man from the criminal history of the life alone can tell you in advance a single peculiarity of the brain of the man hung to-day. The cranium and brain of Pigott are said to have been of exceptional symmetry and perfection, and yet he invented Pigottry, having first practiced it all his life. The skull of an excellent physician of this city has, on account

of its astonishing asymmetry, been noticed and marveled at across the amphitheater. It is needless to say he belongs "*sans phrase*" to the nonanatomical school of cerebrologists.

Thus not only is the so-called fact not proved, and so far utterly without significance, but the interpretation of the fact is a *non sequitur*. It does not follow, nor is it proved, that defective, aberrant, atypical, or simian brains and skulls imply immorality or insanity. Functional defect there may be, but neither scalpel nor microscope has proved any other to exist. If he does not know from what animal it came, no expert could tell whether a sheep's brain or that of a tiger were the more crime-producing one. *Post hoc* is not *propter hoc*, as philosophers have to be warned a hundred times a day. How tired we get hallooing at these *propter hoc* hunters to call them from the way their game has *not* taken. Away they go again after their *post hoc*, whilst all the time their Reynard, their *propter hoc*, sits calmly on the fence watching and chuckling at them. "Deficient gyri-development and asymmetry" may necessitate the poor owner to be a thief or a lunatic, but I think the shape of the pisiform bone should also be considered. Artemus Ward said he knew a man in Oregon who hadn't a tooth in his head, not a single tooth, and yet this same man could beat the bass-drum better than any other man he ever heard.

I cannot forbear to impale another and related pleasantry of these logicians: this is the unjustifiable humanity-conceit that like a hideous Jack-in-the-box springs at you in the sneer of the words "simian," "negroid," "reversion to the animal type," etc., when speaking of these atypical brains. I ask in all sincerity and seriousness, if we are a jot more moral than our remote simian forefathers? Nay, are we not even less so? Take a thousand members of the New York and Chicago Stock Exchange, and a thousand monkeys in a cage or in their native woods,—which set of

gentlemen will break the eleven commandments the greater number of times *Anno Domini* 1889? As to the shameless "negroid," who was the greater sinner, the white slaveholder or his victim? Or read the astounding and horrible record revealed in the official statement of the pardons granted convicts by the Governor of South Carolina, also in the year of our Lord 1888.* Such facts as this last, and such theories as we are discussing, almost make one say, as the joker did of life, it is one-half *if*, and three-fourths *lie*.

2. In the second place, this theory is contradicted by the law of biologic evolution. Throughout the countless ages of organic development, life has preceded function, and function has preceded morphology. †

Habitual action creates peculiarity of structure; desire begets its own instruments. Character is inherited before its organs, if it have any, appear. Nay, more; character, in truth, creates its organs. How in the name of common sense could it be otherwise?

Hunger existed before stomachs, eating produced teeth, fighting begot horns, the snake's enemy existed before his fangs and poison-sacs. In precisely the same way, if crime and crankiness have an anatomic basis, it is because rascality and folly preceded any structural instrumentalities or peculiarities. If we are seeking the *origin* of crime, we cannot, in the name of reason, expect to find it by the cart-before-horse logic of supposing an organ can exist prior to the desire and function of which it is the instrument.

* See *The Nation*, April 4, 1889.

† *Hydra viridis*, for example, has no eyes and is yet sensitive to light; no brain or nerves and yet lies in wait for prey, pursues and fights, or flees from danger. Turned inside out it lives and digests as well as before. It holds live worms down with an arm when they try to get out of its stomach. Any part reproduces all. Cut off the bottom of its stomach and it goes on eating the same as ever, the food, of course, falling out of the bottom,—in this last respect not unlike certain fact-gatherers without a logical stomach-bottom to digest their large eating.

3. A sound metaphysic, psychology, and cerebrology, each, also drives a nail in the coffin. The morality or sanity of a man is his action and nature as a unit; these qualities relate only to conduct as a whole. There can be no conceivable localization of function of morality or reason. These things consist in the use the mind puts all its centers to; they refer to the *animus* of the soul itself that inhabits and uses all organs as its instruments. Interference with the action of a part or the whole of the brain, nay, even nondevelopment of the brain as a whole, cannot change the true quality of the action of the mind; it can only lessen its effectiveness. The hand of a liar and the hand of an honest man do not differ. It is the liar and the honest man that are different. If the hand do not differ, neither can the brain-centers that mediate between desire and function. I know very well, to speak before modern scientific men of "the soul" and as if there were a somewhat behind cerebral ganglia using them as a master does tools, is quite certain to raise many smiles, and secure one the pitying contempt due to the stupid worshiper of some semibarbaric image when the newer and more elegant faith is the vogue. The fashionables enjoy the sweetness of their supposed superior wisdom; the poor dolt the sweetness of his fetich and his faith. But in crying, "Great is Diana," the fashionable worshipers of Materialism should remember that the walls of logic and of fact that shelter the old spiritualistic boobies and their altars are quite as firm as ever. *Omne vivum ex ovo* is the legend of the doorway, and Archebiosis is the myth. Many of the supposed arch-priests of Materialism are in fact traitors in this respect,—Spencer and Huxley,* for example.

* (See Spencer's *Biology*, Vol. 1, pp. 222, 253, etc.) Spencer's position is well known. Here is a gem from Huxley: "Cells are no more the producers of vital phenomena than the shells scattered in orderly lines along the sea-beach are the instruments by which the force of the moon's gravity acts upon

4. But the happiest of the funeral-attendants will be ethics. Determinism is the ally of Materialism. The step from this belief in the anatomic nature of crime and loss of self-control to absolute fatalism is a small one indeed. If we lie because a gyrus gets kinked or is wanting, rob the till because of our simian kind of brain, and choke the girl to death that jilts us because of our cerebral asymmetry, then it follows that every sane act and thought and emotion is predetermined by our neurologic anatomy. The delight in which certain logic-choppers revel in breaking down the barriers of self-dependence and the belief in individual freedom is quite wonderful. It is hardly explainable except upon the somewhat insulting assumption that, themselves feeling and desiring no moral freedom, they prefer the tyranny of structure as an excuse for not following the higher law. Benedikt has a funny story that he, of course, tells in all seriousness. He says he asked an "intelligent counterfeiter" if, circumstances permitting, he would again repeat his crime. For a reply the intelligent counterfeiter said: "When I die, I will you my skull and brain." The old Dryasdust sagely observes that this answer was more correct than any given by philosopher or criminalist as to the psychology of crime. I could not help thinking I would like to have seen the glittering leer of the counterfeiter, evidently a fine joker, as, "flattering his humor to the top of his bent," his victim turned away. The curb-stone logic of the matter is that if asymmetry produces crankiness and crime, then, in the future, all that embryonic cranks and criminals will have to do to excuse their depraved desires is to consult a professor of this new phrenology, and, the diagnosis of "atypism" once settled, they will hasten home to indulge their "inherited neuro-

the ocean. Like these, the cells mark only where the vital tides have been and how they have acted."

sis" and "moral anesthesia" by crack-walking, wife-beating, intelligent counterfeiting, or the innocent pleasures of "homicidal mania."

If Guiteau had known his brain was "congenitally asymmetrical," the disappointed office-seeker would probably have tried his marksmanship on an earlier President. It may be that fatalism is true, but if so, this universe is a stupendous and horrifying failure and farce, and the theory that premises fatalism had better pause before thus giving the lie to both God and man.

Are we not indeed fully conscious, we who are honest and true, that within us burns a light no trick of matter can quench, a power to resist the weaknesses and the tyrannies of flesh and desire, and that in all our lives there is, or may be, a moral force and an intellectual prevision to which heredity is the obedient slave?

5. Moreover, just as inevitably as this theory leads to fatalism and hence to immorality, it also leads to economic injustice. All things, good or bad, are measurable by the tally-stick of financial justice. I protest that the general tendency of this hypothesis, and of its corollaries, is to create lunatics and criminals and to shield criminality with the cloak of insanity. As a result, the expense of maintaining the defective and criminal classes, and of keeping up both the sham and the reality of legal justice, is increasing faster than the population. This expense has to be borne by the producer. Who is he? The producer, whom present methods do in reality punish, is he that quenches in himself the beginnings of folly and unwisdom; is he that throttles in their inception the promptings of over-indulgence and disregard for others' rights; he that works for himself rather than scheme and cheat others out of their earnings. In other words, the popular practice and theory punishes a man for preserving his sanity and honor by burdening him with the support of the thriftless and the depraved.

6. Lastly, this wearisome absurdity is to be condemned because it is contrary to God's law—pardon me, I mean the law of natural selection—and unavoidably creates the evil it deplores. It is no more nor less than a reward held out to all neurasthenics and hysterics, all lazy-bones and cheats, to indulge their criminal leanings and inordinate appetites. Since time began wise and kind old Mother Nature has found that, loving the many as she does, rather than the few, the only true love of all is the law, *Vauriens and vicious to the wall!* Civilization has suddenly grown wiser than the divine or cosmic source whence it sprang and thinks it has found a better way. But is not a man to be written down as an ass that scorns his father and mother? The modern conceit, that we know better than God and nature, seems but simply more egregiously and more impiously long-eared.

It is the glory of fine minds and hearts to bear as their secret motto, *socii Dei sumus*; but the modern paraphrase is, *socii diaboli sumus*. By our brutal pity and by our cruel sympathy we are piling up the burden of the future, in our coddling of debility and in our nursing of deceit, both of which—easy is the descent to hell—hasten to full-fledge into slum, asylum, and prison problems. Pity without justice is itself crime. There is no greater sinner against society than the indiscriminate alms-giver. By encouraging self-delusion, and discouraging self-control, this theory of anatomically necessitated crime operates to deteriorate the average virility of the race and so immensely increases suffering. There is always a vast horde of incarnate canine appetites in human society restlessly awaiting the slipping of the leash of law and labor to rush baying after the temptations of indulgence, vice, and crime. That society and that science are the better assured of perpetuity that tighten rather than cut both collar and leash.

It will have been noticed, and you doubtless have mar-

veled, that I face and treat this problem in a novel way; it may be thought that I have allowed feeling rather than reason to dictate, and that my tirade were better addressed to the vulgar many rather than to the scientific few. But it has been with "malice aforethought" that I have thus written, believing as I do that the present so-called "scientific" attitude of the profession as to this matter is, in truth, inexplicable otherwise; I mean to say that this tendency to erase the word responsibility from the dictionary of law and sociology is itself the unreasoning, unscientific voice of our age and generation. Unconsciously, but none the less truly, it is flattery of the *Zeitgeist*, and flattery of that capricious and greedy goddess is for clear-thinking and straight-seeing people the one unpardonable sin, the sin against the Holy Ghost. The *Zeitgeist* and the *Heilige Geist* are two quite different things. The *Zeitgeist* is never in the right. *Vox populi* is never *vox Dei*.*

We have, for example, to close the book from sheer shuddering when we read of the malignity and *diablerie* with which criminals and lunatics were treated in the past. It seems impossible that so-called criminals were slowly roasted for hours or days while the spectacle was made the gayest of all festal occasions by laughing maidens and flirting cavaliers. The smell of burning flesh and the writhings and cries of the agonized victims were sweet to these strange fiends. We can hardly believe that idiots and madmen were chained in filth for years, kept immersed in ice-water for days, whirled in rotating machines till their tormenters were tired, etc., etc. We flatter ourselves, however, when we think we are wiser. Our present lachrymose barbarism is in the first place quite as cruel to some one and is explainable only as the contrary swing of the pendulum to the opposite extreme.

* "*Maximus erroris populus magister.*" Coke.

One extreme always begets its opposite in the fickle, passions of popular feeling. Physicians should at least know something about the law of action and reaction. It is quite as true law in history as in pathology. We have only substituted an indirect and weak maleficence for a direct and brutal malevolence. Never for a moment have we thought that our feelings should have had no voice in the matter, but that justice, utility, and prophylaxis should have been the rules. This question cannot be studied apart from its relations and historical connections. It is a sociological question, and all such questions and theories must be judged by their results, logical or actual. A thing may be true in itself but false in its relations and pernicious in its consequences. Many true things are untrue. Establish foundling-hospitals, where the brats of lubricity are cared for better than the sweater-babies, and at once concupiscence doubles and trebles the number of illegitimate and syphilitic starvelings. The world's greatest statistician, Dr. Farr, stigmatizes the shame of race-deterioration that we permit in allowing the imbecile, idle, criminal, and defective classes to breed *ad libitum*. Prof. A. Graham Bell * says by permitting intermarriages we are actually producing a deaf-mute variety of the race.

And this brings us to the essence of the whole matter: the origin of criminals and the mentally diseased. Suppose, for argument's sake, we admit that some lunatics and even some criminals are what they are by the force of organic and anatomic necessity. What then? Only this, that we are then bound to ask how the "moral anesthesia" and "cerebral atypism" came into being. In obedience to what necessity or desire, in response to what peculiarity of the environment, did these defective brains and skulls arise? The bat's wing, the seal's fin, a cat's

* *Science*, April 17, 1885.

paw, a horse's foot, a man's hand,—these modifications of one primal organ were molded by the needs of the creature and the actions of the environment into their different shapes. These two things, then, we have to consider : first, the rascal or fool *per se*, his needs, desires, tendencies, etc., and, second, the environment that creates and encourages the rascal and fool.

As to the first inquiry, I again assert that if law-breakers or wrecked minds are such by the stringent necessity of their inherited cerebral defects—a fact I by no means admit,—then it follows that we must go to the parents. It cannot be argued that heredity forces us back *ad infinitum*, either to the biblical Adam or to our simian ancestry. In this case we are not “bound to go the whole ourang,” because, on the one hand, the old myth, wise as it was, was not science ; and, again, because old Mother Nature, left to her own grand wisdom, soon cuts short both crank and criminal with summary kindness. At the farthest we shall only have to go back but one or two generations to find the criminal and the lunatic in the making. The eye that pierces shams sees it all about every day, this subtle secret manufacturing. However heinous and horrible, all lunacy and all iniquity began at some time with slight and repetitive, but always conscious, departures from right living and right thinking.* The duty of sound minds, sound medicine, and sound science is to check and stop these departures. Withstand beginnings, is the logic of all health, mental or moral.

Like a bear by the ears Materialism always lugs in this question of heredity wherewith to frighten the children of the spirit. But with amazing illogicality it begs the whole question in coolly assuming that only matter can inherit,

* Justice Stephen recognized this when he says in reference to crime that the excuse of defective mental power, etc., does not hold “if the absence of the power of self-control has been produced by his own default.”

whilst every fact of embryology and organic evolution shows it is the soul, the spirit, the character, that inherits and that molds the organs of mind into shapes consonant with its own immaterial heritages. It may be asked: If structure is not inherited, what then is inherited?—and I, in turn, ask: If structure is inherited, *when* is it inherited? Is there any recognizable atypism in the fetus? No, it only exists some 20 or 40 years after the *tendency* has been inherited, and after conception has taken place. Tendency was inherited, and tendency, if you please, produced the atypism or the criminal. The ovum or spermatozoid, a structureless cell of the most primitive protoplasm, so small that it is invisible to the naked eye, contains the summary of millions of past lives and the possibilities of millions to come, for each bearing numberless inherited peculiarities even to the curl of hair and peculiarity of speech. Where is the inherited structure in this tiny speck of matter? *The inheritance of power to make structure is NOT the inheritance of structure.* The liar puts his brain to lying uses; the same brain could mediate truth quite as well. The lie is not in the brain; it is in the liar. If you please, the liar and his brain are two quite distinguishable somewhats. Moreover, this so-called “iron law of heredity” is very flexible steel, aye, is utterly limp in the hands of evolution. “The instances in which accidental deformities are *not* transmitted,” says a great biologist, “out-number those in which they are inherited.” Did Shakespeare, Cæsar, Bismarck, Washington, and thousand such, draw their genius from an ancestry ever growing and straining to the culminating bloom? Not at all. The imps of determinism have not yet caught all the birds of freedom either with the lime of a whipster’s logic or with the net of assumed facts.

Among the causes tending in the individual to produce slight, oft-repeated, and conscious infringements of moral

and psychological laws, not a few must be laid to the charge of the biological laws under which we have arisen and exist. The presence of the grinning death's head behind every smile and at all our feasts; the uncertainty of the modern mind as to life's continuance, and even as to the goodness at the heart of things; the stupendous and execrable tricking of every personality by the *duperie* of sexual passion; the subtle and inscrutable diseases lurking everywhere to pounce upon us; the earthquake, storm, cold, and pest bringing palsy to endeavor and ruin to labor; the hunger and the animal appetites always to satisfy or conquer—all these are but indications that life is a warfare, and that our cosmic father has designs and facial lineaments very different from those of Christian benignancy. *Sunt lacrimæ rerum*. In the struggle of life, the weak, the unlucky—for what else can you call many such?—give away mentally or morally, give way under these diabolical teasings or downright thunderbolts of destiny, and man answers nature's inhumanity and brutality and trickery with the same arguments: *ὁ λόγος σὰρξ ἐγένετο*,—the word became flesh;—the criminal and the shattered mind are in these cases the products of nature's inscrutable inethicality, children of a strangely cruel parent, which the remaining strong and honest have to care for. And thus burden begins.

But this part of our burden is a small one in comparison with that chargeable to society's wronging of the individual. It is the oldest, truest of truths: man is man's worst enemy. When one looks out over history, through the long catalogue of bloody and iniquitous centuries; when one looks among the present nations, with their standing armies of professional killers, their protective tariffs, their monopolistic laws and *laissez-faires*, their crime-breeding and lunacy-nursing deviltries,—one almost feels like the old pessimist, who wished he could go to the moon

in order to be able to spit upon the whole human race at one time.

Now, the moral of all this is that these things, one and several, by the consent of all statisticians, economists, and psychologists, are profound, persistent, and necessary causes of crime and insanity. The maxim of Quetelet, that society prepares crime whilst the criminal only executes it, is of course but a partial truth, but it is a great, a solid, and an unconquerable truth. There is no escape from a social or communal responsibility in the production of law-breaking and mental wreckage. And it is precisely this secret, subtle, haunting sense of guilt in the public conscience that lies at the bottom of the disgusting tendency at which medicine has simpered and ogled, to cry, "Poor fellow, he was crazy; he shouldn't have brained his baby, but he was not responsible. Let's build him a nice big asylum, and feed him, and hire attendants and doctors to wait on him." If he amuse himself knocking the attendants over the head, and tearing their clothes off, the black-eyed attendant must only smile and say, "Poor fellow!"

We shall soon illustrate in a large historical way the medieval story of the peasant and his son, who returning one evening past the gibbet noticed that one of the wretches that had been condemned "to die upright in the sun" was wriggling about not dead. In pity they cut him down, resuscitated him, and took him home. He soon proved such a worthless, workless, thieving lout that 'i' the dark o' the moon' they took him back in disgust, and strung him up again on the gibbet.

The expert on the witness-stand prostituting the name of medicine and of science to cover some scoundrel with the tear-proof cloak of insanity is a sorry sight indeed. He may be sincere and honest; if so, our verdict would be that of the Welsh jury: "Not guilty; but we recommend him not to do it again." It reminds one of what the joker

said of a glass-eye: Everybody can see through it except the wearer. In considering the subtileness and intricacies of their diagnoses, so well as the contradictoriness of the testimony of rival experts, one thinks of the cannibal chief's reply as to what had become of the missionaries. "Alas!" he said, "they gave us so much good advice, we *had* to put them to death mercifully."

In the old days of the childhood of the race the troubled conscience got rid of communal responsibility by heaping its sins metaphorically on a poor little goat or sheep, and shoo-shooing it over a precipice. It was crude; it was a funny bit of psychological legerdemain; it was hard on the goat, but—it was satisfactory. Modern scape-goat worship is a poor substitute. It also is crude, and it is jugglery, but is unsatisfactory. The future will see through the trick and will find it horribly expensive. The Chinese way is doubtless a little of the opposite extreme, but it doesn't load up the future: they regard insanity not as an extenuating but as an aggravating circumstance in connection with crime.*

There is another reason why the communal conscience and responsibility cannot be downed. Not only do we make bad laws, fail to make good laws, and leave good laws unexecuted, but we are more or less conscious that the community is full of unarrested, unpunished criminals and insane. As every brain and skull, rigidly considered, is atypical to some extent, so every one is guilty of more or less scoundrelism; we are all a little daft. Often, too, the difference between the criminal behind iron bars and the criminal behind social custom is only a difference of intellect. The first simply got caught. Maudsley well

* With its 300,000,000 inhabitants China has no asylum for the insane. At the Shanghai hospital, where 22,000 patients are treated annually, there were but eleven cases of insanity among the number.

says, "There is a sort of tacit conspiracy in the social world to believe itself more virtuous than it is." This also coincides with the common impudence that tries to make crime and mental disease the result of ignorance and humble social position, the fact, of course, being the exact reverse. Modern education and modern wealth are at last but a sort of taking down the bars, or a training in jumping, whereby selfishness may get into forbidden clover. The sharp, educated, superrefined urban population would rot in its weakness and corruption if the stupid, honest country lads and lassies did not transfuse their blood and virtue and health into its veins every day.

To sum the matter up : Is the origin of crime and mental disease to be sought in the individual or in the influence of the environment ? Undoubtedly in both, but it agrees with what evolution teaches as to the origin of faculty, and it corresponds with what we learn by a study of the laws and customs of our modern life, to lay by far the larger burden of responsibility on forces outside and beyond the government of the errant one. In unison with this comes also the thought that toward this view tend the lessons of a true religion and a large kindness. To see how outraged, groping, suffering, and enduring humanity clings to rightness of conduct and sanity of mind, leads us to the profoundest honor and reverence of our kind.

All of these considerations are of the greatest interest and far-reaching value, so far as concerns the origin and the prophylaxis of crime and insanity ; but my contention would be pointless and my logic most lame if I did not at once add, that so soon as the overt act, that is, the proved criminal or mentally incompetent, stands before you, his judge, the whole question of responsibility or irresponsibility sinks at once and wholly out of sight. No judge or jury or expert should have anything whatever to do as to the prisoner's responsibility for his act. The whole Gor-

dian knot is cut at one quick stroke by the staring, evident fact that nothing less than divine omniscience is in the least capable of deciding the question, or of meting out the punishment according to guilt. It is a bald, hideous, and stupendous absurdity, this ridiculous assumption either of power or of right on the part of any human being to explore the hidden recesses of the mind, and to decide how far sanity has been driven out, and how far that strange mystery of individuality has sinned against its own light and by its own consent.* Every good, modest, and large intelligence knows this is so and mourns the barbaric shame that keeps the enormity upon our statute books.

As a necessary corollary you will have foreseen that, in my view, the death penalty should be abolished. Words fail me to express the hideousness of this last relic of savagery in an age of so-called civilization or even of good sense. There is not a single thing that can be said in its favor that is not at once annihilated by a spark of common sense or common justice. Whilst private retaliation and vengeance were allowed, an eye for an eye and a life for a life were excusable; but in taking away from the wronged man the right to kill his injurer, you have left retaliation and vengeance behind as unworthy and useless examples of barbarism. Lord Bramwell's deterrent theory of punishment collapses like a soap-bubble when you probe it with fact or logic. It is on a par with Niemeyer's approval of the dictum of the wife of a Prussian general that whooping-cough is only curable with the rod; and also Prof.

* A ridiculous example of this is to be seen in the April, 1889, number of the *Journal of Mental Science*, where a believer in his own power to penetrate the mystery of mind and crime gets sadly tangled in his own nets. A poor hectored and starving workman, finding the sorry farce of life a bitter tragedy, kills his own beloved baby, rather than permit self and child to continue the bootless struggle. As if "enteric fever" or the "span of his arms" had anything to do with it! Such "science" is enough to make the angels weep.

Ruhle's recommendation of the shower-bath and birch-rod in certain cases of chronic vomiting. It is said that Quinet's mother used to hire a strapping fellow to come every Saturday and thoroughly thrash all the children, just on general principles! The courts, judges, and experts should act in the same way with the whole human race, for we are certainly all guilty. If the deterrent theory is the right one, then why do we not execute children and the insane? There is not the least doubt that both children and very many insane love their lives, and are even more keenly alive to the fear of punishment than most criminals, and yet, hang a child, and outraged society would justifiably rise in horror and mob sheriff, jury, and judge. Indeed, it may with much truth be urged that the so-called deterrent effect often has a stimulative effect. Dr. Guy tried to show that the execution of a lunatic was always followed by a crop of new murders. Bramwell asserted that many lunatics relied on immunity from punishment for crime on the ground of their own lunacy. Every resident or nurse in an insane asylum will acknowledge that there is more deviltry than insanity about many of their cases, and that if the fist or some equally serviceable but less brutal means could be used in return, much of the combined *diablerie* and lunacy would disappear. Humanity, recognizing the incompetency of the deterrent theory, has turned from it with the bungling make-shift and stop-gap of insanity, and at the present rate every villain will soon be excused as a crank.* The mere financial aspect of judicial murder is enough to condemn it. A man commits a crime; you spend thousands and hundreds of thousands of dollars to try him (because of your deterrent and punishment-theory it is of infinite importance that no

* "Society, having manufactured its criminals, has scarcely the right to treat them in an angry spirit of malevolence."

mistake be made), and then after this you spend thousands more to kill him. But his life is certainly of some financial value. It is worth \$14,600 at the age of 21, according to the present average rate of wages and probability of duration of life. You have spent several thousands of dollars to procreate and raise him to manhood; he is capable of working for you all his life; you have the right of making him work for you;—and yet you kill him in the most expensive way possible. I call that very lunacy of justice and the most egregious of follies.

The whole modern idea of punishment is a relic of barbarism and should be eradicated from jurisprudence, since by its very nature it can neither be just nor prudent.*

The essence of the English law consists in the statement that "to establish a defense on the ground of insanity, it must be proved that at the time of committing the act the accused was laboring under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or if he did know it, that he did not know that what he was doing was wrong."

The essence of my protest consists in this:—

1. No human power in a specific case can decide as to either point, and it is folly to pretend to do so. †
2. The tendency of both theories is to increase the evil, not limit it.
3. If we do our first duty,—deprive both classes of liberty and of power to reproduce their like, and try to cure them,

* Lord Justice Fry said that "Punishment is an effort of man to find a more exact relation between sin and suffering." I would say that civilized jurisprudence should have nothing whatever to do or say about sin, suffering, or the relation between the two.

† It is gratifying to see that a halt is called by the Supreme Court of New York. According to a late decision the expression of an opinion on the part of a physician that a man is insane on any other ground than that he is dangerous to himself or others renders the physician liable to a suit for damages.

it doesn't make a fig's difference which theory is right, because both must then be ignored. The only sensible position is simply this: when a person either by crime or incapacity to care for himself has forfeited his right to freedom, then the people must take that freedom away. We have no earthly right to kill in return for crime done. We should reorganize the treatment of criminals and lunatics upon the sole principles of protection of the community and reformation of the law-breaker and mind-breaker, to the utter exclusion of the idea of punishment or of deterring others,—the whole upon the most economic basis possible. Protection, reformation, economy; it is self-evident that these should be the ideals aimed at; but it is just as indubitable that present methods, except bunglingly and partially, neither aim at nor secure either, but instead do often seem as if devised to secure the reverse. They certainly do not protect the community in hardly any imaginable way; they exaggerate and create both crime and lunacy, and no dozen of prize boodler aldermen could have invented a more expensive system of not doing justice and of fleecing the taxpayer. As illustrative of the financial aspect: it is costing Great Britain something like twenty millions of dollars a year to care for her insane, and the amount will rise to thirty millions within ten years. It is simply impossible to estimate the bills of the police, the judge, and the jailer in the cause of crime.

As to social protection, every one knows it is a farce only equaled by the pretense that it does protect. In the recoil from the old heathen judicial murder, and in lacrimose snivel, we adjudge most criminals lunatics, or if we can't do that, we put them in a pandemonium that, with caustic malevolence, we call a penitentiary, and a little later, with full powers of reproducing their like, and with hate, not penitence, in their hearts, we let them slip back into the bosom of the community, by the mysterious fatuity of a

discharge from an asylum-superintendent overburdened with his load, or a pardon by a possible political bummer miscalled a Governor. Then if Dean Swift were turned deity he could not have instituted a more sardonically bitter stroke than that now perpetrated by the greatest State of our civilized and Christian America: that of supporting in enforced idleness her malefactors who beg for work, and who from want of it are going mad at the rate of 37 in the past six months.

If we turn to the idea of reformation a still more remarkable spectacle is offered us. So far as the "penitentiary" is concerned, it is more apt to make everybody else penitent than the criminal. Even pretense at reformation has long ago passed into a joke of the chaplain, and if, while working out his sentence, the poor devil of a criminal do not lose the last ray of morality and hopefulness, it is no fault of the system. If, on the other hand, we look for a therapeutic zeal commensurate with the dogmatism of the school that holds mental diseases to be wholly physical, we are astounded to find that cure * and cause are things of little interest. It is no less an authority than Tuke that says † "we seek in vain in our asylums for any evidence of the systematic inquiry into the treatment of these conditions. The public thinks that madness can be eliminated by entertainment, and the superintendent is bound to work up to this theory. These great establishments, instead of developing into great hospitals for the cure of disease, have done little more than maintain a high character as model lodging houses for the insane." This indictment is nailed with the fearful charge

* In 1870 Sir Arthur Mitchell found that out of 1297 patients admitted into Scottish asylums in 1858, 474 died in the asylums, 412 were then alive as chronic lunatics, and 411 had died, or were alive, sane. This is a worse mortality than hydrophobia.

† *Nineteenth Century*, April, 1889.

that but one contribution to the pathology or therapeutics of insanity worthy to be called scientific has appeared as an offset or rival to the giant strides of progress in every other department of science and medicine. In fact, what ingenuity could devise a better method of making, exaggerating, and confirming madness than to huddle hundreds and thousands together suspected or convicted of mental defect? That this is so, even Tuke admits, and says further: "What every case demands as the primary condition of recovery is separate and individual treatment and consideration." *

In olden times the pianoforte-tuners used to have an octave in which all the dissonances and discords of the whole keyboard were gathered that they didn't know how to distribute and harmonize. They called this octave "the Devil," and the player, of course, had to avoid it as much as possible, or touch it very gingerly.

The pith of the whole matter consists in the fact that in our life the sociological tuner cannot confine his "Devil" within the limits of one octave. By dint of an unmorality that is only equaled by the development of sly cunning, the modern intellect has got ahead of the antique conscience and is fast leaving criminal jurisprudence as a curiosity of "ye olden time." That is to say, like the modern pianotuner, we have, so far as true criminality is concerned, succeeded admirably in distributing "the devil" throughout the whole seven octaves of society. But as regards lunacy, the old plan of the single octave has been rigidly adhered to with the inevitable result that the devil is overrunning his octave and threatening to absorb a big part of the keyboard. In 1879 Professor von Krafft-Ebing, the well-known alienist, estimated that in the most civilized peoples

* Walford says the mortality in public institutions is ten times as great as the general mortality.

there was one insane person to every 500 of the population. More recent statistics show the proportion to be more nearly one to every 300 or 400. All statisticians are agreed that the greater the civilization, the higher the ratio of the insane, and that without exception the increase is far higher than that of the population.* In less than a dozen modern nations there are to-day about a million lunatics. While the general population doubles, the number of the insane increases three-fold or four-fold. The number is kept much lower by what may be called the obverse of the medal, the fact of suicide, that is also growing three or four times faster than population. The number of idiots, blind, deaf-mutes, and criminals, is likewise increasing more rapidly than the people who have to support and care for them. We have now probably six or seven, perhaps eight, hundred thousand such folk as one of our burdens in this country.

In view of the rapidly increasing load, would it not be advisable to remodel our penal laws and those regulating the treatment of lunatics in some way that shall accomplish the decrease and not the increase of these classes? Would not this end be sought more rationally by the following means:—

1. The complete eradication from legislation and jurisprudence of all ideas of punishment and of the deterrent effect of the same, sentence to loss of freedom being given upon certain proof either of criminal act or incapacity of self-support or self-control.
2. The establishment of a nonpolitical, highly paid State Board of Control of the highest Medical, Legal, and

* In Great Britain the average annual increase of lunatics in asylums has been 1580, and the gross registered increase 45,881. In Paris the number in 1872 was one lunatic to 1212 of the population. In 1886 the proportion was one to 1091.

Administrative ability, which shall have charge of the combined Defective, Dependent, and Delinquent classes, the discharging or pardoning power to reside in this Board alone.

3. The Treatment of these classes to be organized so far as possible upon an economic basis, but always with the sublime and steady purpose of Cure in view.

4. The Protection of the Community, and the safeguarding of the future against the inheritance of criminal and unsound taint, by the euthanasia of idiots, monstrosities, etc., the interdiction of marriage of paupers, and of the physically unsound, and by the asexualization of the law-breaker and the mentally unsound.

The thoughts underlying this writing might be summarized as follows:—

1. The unvarying testimony of statisticians and students of sociology is that the defective, dependent, and delinquent classes and suicide, as a whole, are, in all civilized nations, steadily and continuously increasing much faster than the increase of the communities supporting them; this shows that something is radically wrong as to the causes and the societies producing these classes; it is, indeed, a wrong that cannot fail in time to bring society to a very literal *reductio ad absurdum*,—*seu ad lunaticum*.

2. Though not wholly, this wrong is found to consist chiefly in the vicious structure of society, economically and morally, in a perniciousness of ideal and custom that can but yield a fruitage of criminality and mental wreckage.

3. The half-conscious, half-smothered feeling of this communal responsibility, cooperating with the criminal's efforts by legal technicality and by medical aid, has served to the same end by legalizing and excusing crime in the community, or by covering it with the cloak of insanity.

4. The aid rendered by a certain school of medical writers and experts to this morbid tendency has been based

upon the theory that crime and mental disease are simply the effects of criminal or cerebral atypism and brain-disease, and therefore anatomically necessitated. This theory is not only not proved, but is disproved by a number of unanswerable facts and considerations, and is a stultifying argument to use by those whose field of medical study has shown the least progress, and in which therapeutics has hardly entered.

5. Our legal sentences should be divested of all thought of punishment or of deterrent effects, the asylum and penitentiary combined and put under one management, the clinical examination and study of the pathogenesis of these conditions furthered, and all with the sole end of cure and of prophylaxis.

To hasten the flow of dreary hours a gifted woman once wrote a gruesome tale of how a cunning but short-sighted delver and experimenter in life's mysterious genesis got together many old and foul gatherings from cemetery and from dissection-room, and created a living monster of wonderful growth and power, but without a touch or breath or divinity. Love and sympathy of a certain kind it indeed sought and hungered for, but the miserable wretch was shunned by all. It soon became conscious of its own moral deformity and hideousness, and in detestation of its own life it came to hate the author of its being. Growing ever more powerful, it restlessly and viciously plotted the injury and ruin of its unfortunate creator.

DREAMS, SLEEP, AND CONSCIOUSNESS.*

A PSYCHOLOGIC STUDY.

I. Prefatory.—The design of this paper is to study the nature of consciousness and of its origin, from the facts of sleep and dreams. But although one's own dreams are vague and elusive, those of another person must be particularly so; it therefore seems necessary to depend mainly upon one's own dreams for data. Hence the apparent egotism of the references to follow.

The facts supposed to be known are, some of them, as follows:—A sensory, afferent, or centripetal nerve is one that conveys an impulse from an outlying or peripheral point toward the spinal cord and brain. In some ganglionic center it becomes an efferent, centrifugal, or motor impulse, that is conveyed by the appropriate nerve to the muscles of the part first stimulated, and this part is accordingly moved or becomes otherwise functional. Stimulus of the nerve leading from the skin, at any point in its course, produces the same motion, and an electrode, thrust into the cortical center, also produces it. But the action of this center is also directed by the consciousness or will; we can move the foot without its having been hurt. Consequently, commissural, or associate fibers, must proceed from the motor center to the organ of consciousness to convey its impulses to this organ, and yet others to convey mandates from consciousness to the motor center. It is the same with every sense-center; it must have afferent

* Published in *The Open Court* of January 24 and 31, 1889.

and efferent fibers, uniting it with the higher center of consciousness. These facts necessitate a localization of the organ of consciousness. Such cases as "The American Crowbar Case," and a thousand observations in vivisection and pathology, show that this organ is located in the frontal lobes of the brain. The theory of sleep and dreams now assumed is that in sleep all the subordinate centers of sensation and motion are nonfunctional, neither influencing the activities of the organ of consciousness, nor influenced by it, and that dreaming is the mimic play of the organ of consciousness without the stimulus, the inhibition, or the data—*material*—habitually furnished by the subordinate centers.

II. What Is Sleep?—So long as physiologists have not accurately determined the physiological conditions of sleep, we cannot be dogmatic in our definitions. But whatever else it may be, it is essentially a condition of rest. Our waking life is characterized as a life of action, that is, of the outlay of force. We picture to ourselves the great motor centers of the brain and cord as undoubtedly recouping themselves, even during waking activity, from the great manufactory of force, the digestive and assimilative system; but it is also necessary to suppose that, during waking, we are, as it were, "running down," trenching closer and closer upon both the store in reserve and the power of ready manufacture, so that a time at last arrives when all expenditure must cease and the process of restorage and restoration must have sole sway. Nervous phenomena are plainly phenomena of the discharge, guidance, and distribution of force. Functional activity everywhere exhausts, and necessitates periods of rest, regeneration, and restorage. It is this dynamic aspect of the question that is certain and suggestive. Sleep may be thus partly defined as the cessation of the functional activities of the sensory and motor centers that habitually consist in the reception or

the discharge of force. Organs, whether of motion, sensation, or coordination, are not now pushed into action by the messages of command from the resting or sleeping centers. I am aware that this does not account for the difference that undoubtedly exists between the rest of sleep and that of waking. There is, of course, some mystery here, though I do not believe it a profound one. When awake, whether resting or the origin of muscular contractions, a motor center is probably the source of continuous discharge. All muscles have *tone*, many are required to be persistently innervated, and any or all may instantly require power. But in sleep the function of regeneration of nerve-force predominates over the discharging function. One organ cannot at the same moment perform two totally different acts or functions equally well, and hence one must be paramount. Now, unless discharging, a center cannot affect either muscles or consciousness. If it do not affect muscles, it rests. If in addition it do not affect consciousness, it sleeps. When, in all motor and sensory centers the regeneration or restorage function predominates over the discharging function, and when, therefore, the organ of consciousness receives from them no discharges, we have the general condition of sleep. Permanent predominant discharging constitutes the waking condition of centers, single or general; permanent predominant regeneration of nerve-force constitutes sleep. In this, as in many other respects, it is highly interesting to find, as has lately been done,* that the renal secretion of the sleeping-hours is distinctly stimulant and convulsivant, while that of the waking-hours is soporific and narcotic. We thus see that by some not-understood method nature eliminates during wakefulness the material of the blood that would, if kept in it, dull the keen edge of action,

* *Leçons sur les auto-intoxicants dans les maladies.* Par Ch. Bouchard.

whilst, on the other hand, there is during sleep, strained out of it, material that would spur the centers into wakeful activity. This fact is very suggestive.*

III. What Is Consciousness?—A simple reflex act is one that proceeds from a single stimulus without the implication of other possibly-related centers. The subsidiary center intermediating the motor response is sufficient to effect the objects of the act. If the act is more than reflex, if more than one center has to intermediate the complex act, the impulse must proceed from a higher coordinating focus that uses the subordinate centers as its media or instruments. The center of a simple reflex act may be called presentative, that or those of others placed over them, representative. Consciousness may tentatively be considered as the single and highest coordinating focus of all the representative centers, or the unique rerepresentative one. Hither proceed the centripetal lines of stimuli from all points of the periphery. But a moment's consideration shows us it is not only a focus, and one exercising a rerepresentative function alone. The primary object of all stimulation is reaction; hence, like all its subordinates, it is also, and in fact largely, directional, executive, governmental. In sleep the subordinate or representative centers are not functional, no peripheral stimulus reaches it, and it issues no orders to underlying centers of motion.

IV. Does Consciousness Sleep?—Sometimes we have dreams in sleeping, sometimes we do not. Strict examination of our waking consciousness shows it is not a matter of memory; we do not dream all the time when asleep;

* It is also curious to find the popular belief that relatively more births occur in the small hours of the night is scientifically true. See Dr. Swayne in *Bristol Medico-Chirurgical Journal*, September, 1888. One wonders whether the common belief that more deaths occur in these hours is also true.

we sometimes forget our dreams. Upon waking, we sometimes clearly remember our dreams, at other times our memory is confused; or, again, we are only certain that we have dreamed, but without a trace of what it is we dreamed; and, lastly, we are often perfectly sure we had no dreams. Moreover, as all vital functions must have their rhythmical periods of rest, even the heart and lungs being no exception, so the organ of consciousness must sleep. In this fact lies the explanation of what must be considered the pathologic character of the consciousness of a vivid and continuous dreamer. An organ of consciousness, if kept by its own hyperesthesia, or by the fevers and abnormalities of its subordinate centers, or by the unremitting bombardment of multiform sense-stimulation, in a condition of unrest, must exercise an irregular and poor waking control of the body. If the general never slept, his army would soon sleep—the sleep of the vanquished. Forced wakefulness was the most horrible of ancient tortures. The physician well knows that his prognosis often depends upon the effect of his hypnotic.

V. The Difference Between the Dreaming and the Waking Consciousness.—The waking consciousness, as we have seen, is the highest unifying center of the whole organism. It is the focus wherein memories of all past experiences are correlated with all present stimuli or motives, and whence the command is given that is best to subserve the preservation of the organism. The dreaming consciousness,* in the first place, is evidently deprived of the great body of present incitants to action; all stimuli are wanting, all subordinate centers are functionless.

* Unless specified, and especially now, I mean by the dreaming consciousness, the placidly, reflectively, dreaming one,—not that peculiar one in which the suffering, struggling consciousness is vehemently endeavoring to arouse subordinate centers,—a condition strangely called “nightmare.”

What material has it to work upon? From what data must it now proceed? Plainly, those of memory only. But in dreams it is a striking fact that remembered things are not orderly, they do not correspond to reality, but are fantastic and untrustworthy. Why, then, does the waking and sleeping memory differ in such a highly important matter as correspondence with reality? Evidently because in sleep the control of reality is not present; because memory is a function of subordinate centers as well as of consciousness. No more satisfactory conception of memory can be given than that its physical basis consists in a faint reproduction of the same ganglionic discharges that took place in full force at the time of the original sensation or action. If, therefore, the subordinate sensori-motor centers are not discharging toward the consciousness-center, all that is left in this center is *the memory of a memory*,—and, in fact, such a designation alone conveys a conception of the unreal and ghost-like nature of the memory of the dreaming consciousness. This center in dreaming acts weakly and faintly in the same way that it formerly acted strongly when fed by the full forces of its waking subordinates. But in sleeping it remains without the control of reality, which is always logical or obedient to the law of causality; and hence, in so acting, it must be illogic and fantastic.

VI. Origin and Nature of the Waking Consciousness.

—The organ of consciousness is single, specialized, and localized. Dreams show us that while the habitual sensori-motor functions and all stimuli are absent, consciousness may be intensely active. Its essential functions are preserved in sleep, and this, were it a cerebrally diffused organ, would be impossible. From of old consciousness has been compared to the constriction of an hour-glass through which the sand must pass grain by grain. But one train of ideas can occupy consciousness at one time, and it is

always a train, a line, a succession of single stimuli, to which it reacts. This is equivalent to saying that it reacts to the strongest stimulus presented at any one instant. This is its simple form, best illustrated in the consciousness of the dog, where it is always and, as it were, mechanically responsive to the presented object. However obedient and engrossed by a duty or demand upon its attention, let there suddenly appear another stimulus,—another dog, a physiological need, etc.,—and previous objects of attention are, as it were, annihilated in the total engrossment of consciousness with the new object. It is the same with almost all animals. Remembrance of past danger in all hunted animals keeps consciousness keenly alert to the signs of danger, so that the appearance, even the thought, of such signs at once floods the organ of consciousness with powerful stimuli, to the exclusion of all others. Indeed, it does not seem absurd to suspect that the escape from danger has been the strongest factor in the development of consciousness. It would certainly emphasize the quality or ability of differentiating self as the object of consciousness, and setting it clearly forth as the chief object of solicitude. An animal rises in the scale of intelligence just in proportion as it is capable of preserving clear memories of past experiences, individual or racial, and of fusing these with the present stimulus so that the resultant action shall most successfully secure the preservation of himself and his species. The essence of the matter consists in this fusing process, and the consciousness of man differs in no essential characteristic from that of animals except that, at the instant of fusing, a wider sweep of possible results, a more reflective weighing of more diverse experiences and complex motives, enters into the count. Extension of the weighing time, complexity of the pondered objects, and delicacy of the balancing mechanism—these are but differing degrees of the same

powers that belong to both alike. The first to be evolved must have been the extension of the weighing time. The mechanical jumping from one presented object to another with unpondering rapidity is naive but primitive. That the serpent in all antiquity has been worshiped as the wisest of animals, may have been because we catch in the restrained glitter of his eye the ability to ponder conflicting motives and stimuli longer than others. Action does not follow stimulus with the celerity of a mechanical force. In the struggle for existence, that animal would rise above his mates which, other things being equal, could at will prolong the time between the reception of competing stimuli and the resulting action. With this ability would go, *pari passu*, the ability to handle more varied stimuli and motives. Delicacy of equilibration of multiform forces held long in suspense is only possible to the highest human consciousness and is its superb characteristic.* Thus, to hold in suspense many competing stimuli, and weigh them accurately, would require a large and complexly organized center such as the frontal lobes, whose human development has been exactly proportional to the growth of intelligence. After a period of imaginative excitement or creative intellectual work I have a sense of constriction and tension in the frontal lobes, and especially of the right side.†

* Discriminative attention is a human faculty, and appears to be either a selective receptivity of the organ of consciousness, an exclusive reception by it of one kind of stimulus, or the exclusive direction of its innervation upon a single or a special set of subordinate motor centers.

† Still another indication is the fact, daily observed by every physician, that eye-strain is a frequent and persistent cause of frontal headaches. It may be worth noting that, like the center of articulate speech, the organ of consciousness must, by its very nature, be a single organ. Bilateral symmetry is the law in most other functions of the body and its nervous mechanism. Speaking evolutionally, articulate speech is an accidental after-thought, and so must be

VII. Origin and Nature of the Dreaming Consciousness.—It is of the very nature of the waking consciousness that it must always be responsive to some stimulus; that it must be equally responsive to either of the many and varied possible stimuli; and, lastly, that it must respond to a stimulus of low intensity, however delicate it may be. It is this delicacy of action that I wish to emphasize. Irritation at extreme or unnecessary noises; esthetic pain at crude and loud colors; sensitiveness to differences of stimulus of any kind,—these distinguish the highly organized personality. There is no bolometer or other instrument of precision delicate enough to measure the inconceivable minuteness of the force that is sufficient to influence consciousness. This quality proves of profound service in sleep. When the animal or man lies down to sleep, I think that, at first, consciousness also sleeps, since to some extent it also must yield obedience to the general law of the rhythm and rest. When sleep is permitted, it is because it is safe to permit it. Hence sleep may at first be dreamless with less danger to the organism. But, since the struggle for existence began, the sleeper has needed a sentinel to stand watch over him, and be on the alert for any one of his thousand enemies. When one thinks of the manifold agencies of harm, such as fire, robbers, impure air, malposition of the body, too great heat or cold, physiologic needs or pathologic conditions, etc., etc., to which the best pro-

located upon one side or the other of the two-sided brain. Upon *which* side is not only not invariable, but it is even found to follow—or cause?—the education of the opposite hand for intellectual work. In a recent very interesting case the speech-center was proved to be localized upon the left side, because, though the man was left-handed for everything else, the one intellectual act of writing was done with the right hand. Arguing from analogy, it might be supposed that the organ of consciousness for right-handed people would be found in the left frontal lobe, since the right hand is the one most generally used for intellectual things, as writing, gesturing, etc. There are other considerations that would argue the reverse.

tected and most civilized people are liable, and how insecurely most of us sleep,—and when we add to all these all the dangers and enemies and perplexities of the savage or the higher animals, we can then vividly realize how necessary such a sentinel is for the preservation of the organism and the species. That the period of the exhaustion of consciousness is more brief, that its resumption of function would be more speedy, than with other organs, goes without saying, and especially since its function is mainly equilibrational, directional, mirror-like, rerepresentative,—not creative, remolding, motor, or representative. I am certain that my dreams grow more vivid toward the time of awaking, just as I have no dreams in the first hours of sleep. My own dreams also show plainly the sentry-like function of the dreaming consciousness. I am very sensitive to malposition of the body in sleep. Pressure upon a nerve-trunk is with me extremely prone to produce the phenomenon popularly known as “sleep” of a limb. For this reason I sleep upon a hard bed, and I can sleep in but one position, upon my back, without pillow and without flexion of any limb. If by accident these conditions are broken during sleep, I have as a result a peculiar experience that has happened to me repeatedly and all through my life. My dream at first takes on a tinge of impending danger until I become aware that I must awaken myself. The labor of doing this is both powerful and painful. I am truly conscious of my effort, of a struggle with my dormant members. The energy spent in endeavoring to arouse myself is tremendous. At first I can perhaps move but one finger, then I can bring other fingers into the control of the will, finally the alternate flexions and extensions include the hand, and I may have to wave and thrash the hand and arm for some time before arousing a sufficient overflow of stimulus to reach other motor centers and spur into the condition of “awake” all the sensory and motor centers of

the body. Sometimes the head is the movable part, and this is rotated from side to side with ever-increasing extent and quickness, until the general arousing is attained. All this is to me an indication of the sentinel function of consciousness during sleep, of its quick response to slight stimuli, of its directional control of subordinate and representative centers directly intermediating muscular action. It also shows that it is executive only through its agents. Its motor-commissural fibers must end in the direct motor-centers about the fissure of Rolando. But it also implies that its sensory fibers are, in part, direct, and warrants our belief that the great bundles of centripetal fibers proceeding from the periphery split, and whilst the greater number proceed to the direct sensorimotor or representative centers about the Rolandic fissure, a limited number proceed directly to the organ of consciousness. Such an anatomic arrangement would explain the sentry-like function. It would thus become clear why a peripheral stimulus, as a malposition of the body, could arouse the light-sleeping organ of consciousness, which, in turn, could arouse the representative or direct motor Rolandic centers. As will be noticed, the dynamic aspect of the question is always decisive, since the control of subordinate centers is only at first of the smallest or most easily moved muscles, such as the fingers, a hand, or the head placed in unstable equilibrium. And not only this,—I have often had the sense of weight and discomfort of a limb before I had succeeded in awakening the center that controlled that limb. The argument for direct sensory fibers to the organ of consciousness is still further strengthened by the frequent phenomenon of my sleep that follows: Upon being aroused by a very sudden noise I have often clearly recognized the fact that I hear the sound with my consciousness, if I may be pardoned the seeming absurdity, before I do with the auditory center. The vibratory impact arouses consciousness a moment before it

arouses audition. The safe-guarding function of consciousness in sleep is thus again exemplified. In *Science*, November 2d, a correspondent describes an interesting phenomenon of his dream that also throws light upon this aspect of the question. The strokes of a wood-chopper were, in the early part of the dream, irregular and without order. They then became rhythmical for four strokes, and then the sleeper awoke to find the clock striking midnight. After awaking he counted four beats, and thus he knew that the clock-strokes brought into the dream their rhythm at about the fifth stroke, and made the axe-strokes coincide with the clock-strokes. In other words, the sound and its rhythm reached consciousness directly, impressing upon it their own peculiarities, which persisted for a time until the stronger stimulation of the auditory center aroused all the mind into "awakedness." * Finally, there is one other curious illustration of the question that also shows the delicacy and the independence or the action of the sleeping consciousness. I allude to the ability possessed by some

* In a late dream my fancy took on a musical remembrance or coloring, and the same may have been aroused by the miaulings of a cat below the window. Before awaking, the music of the dream was consonant with that of Thomas, and was exceedingly grateful and musical. When the caterwauling became loud enough to awaken me, the pleasure of the dream was suddenly changed into disgust at the unmusical noise of the cat, that an instant previously had been one of delight. In this it is also possible to suppose the stimulation of consciousness was from and through the auditory center, but that too faint or imperfectly worked-up material was furnished. It seems more probable that the stimulation was directly from the external sense-organ without the intermediation of the sound-center. Just as fibers proceed from the cochlea to the cortical auditory center, where neural vibrations become sound, so it would seem that other fibers proceed from the cochlea to the consciousness center intermediating its direct stimulation. If, in my dream, consciousness had been fed from the auditory or musical center, it could hardly have mistaken the cat's misery for music. The same may be said as regards my dream of being intensely "tickled" by a hand beneath the chin to awake with the thought that my neck is not the least "ticklish."

people of, as it were, winding up the alarum of their mental mechanism so that they shall awake at a given hour. I have known people that sleep soundly and awake habitually within a few minutes of the time they had, upon going to sleep, determined to awaken themselves. My own attempts to do this always result in lying awake the most of the night. My alarum goes off at a *souffron*, entirely too soon, and keeps on rattling at a great rate!

Hypnotism, it may parenthetically be remarked, would seem to be the reverse of the dream-state. In the latter there is no centripetal stimulus, the subordinate motor centers being quiescent. In the hypnotic state the senses are alert, the sensori-motor centers actively functional, but the center of consciousness is resleep, or, what is the same thing, supplanted or enslaved. How this can be done is a mystery. However well attested, one is inclined to think it impossible, and that it does not happen, except in the natural way, that a pliant, weak mind finds satisfaction in acting a role, called the hypnotic state.

VIII. Insomnia.—In passing we may note the influence of the kind of waking life upon the dreaming consciousness. Work, especially physical work, but even normal mental work, is usually followed by refreshing and comparatively dreamless sleep. Worry, solicitude, and vexation, bring troubled dreams and even pronounced insomnia. Why is this? In normal exhaustion of the nervous centers there is no conflict or unwonted excitation of the center of consciousness. There is a low reserve, and investment or action must cease until interest or income accrues. In long-continued anxiety, however, consciousness is stormed by a multitude of conflicting and continuous stimuli, leading to no definite resolve and action, and hence ending in a surcharge of energies, probably a real hyperemia and febrile excitation of the organ, that do not cease at night

or with sleep. I do not doubt that the frontal lobes of a man dying, finally worn out with years of care and disappointment, would, under the microscope, show a different condition from those of a healthy and happy man. On the other hand, if hyperesthesia is pathologic, anesthesia is certainly indicative of a poor type of consciousness. That must be a vegetative sort of consciousness that sleeps as soundly and as long as the lower centers. No nimble-witted man can fail to be a dreamer. *My* friend must be a dreamer of interesting dreams! One that does not dream is not exceptionally sympathetic, responsive, alert;—he has not highly keen sensibilities, is not nobly religious, or charitable, or aspiring.

I have always been subject to insomnia of the following kind,—I am likely to have periods of paroxysmal, emotional, and imaginative excitement: If I am pursuing an object of study, trying to solve some scientific or practical problem, or if greatly interested in some work of art, etc., I habitually awake in the night after a short sleep, and at once the whole machinery of intellect, imagination, and consciousness is in full cry! The heart is aroused, and by the spur of excitement is put into the field at full speed. It is clear that this organ of consciousness requires the best of blood, and a deal of it! All this would appear to be the overflow of nerve-force from the center of consciousness along the centrifugal lines of its habitual discharge to the subordinate centers that are thus kept in a state of activity though really needing rest. All the devices for wooing sleep are but tricks to prevent the outflow. None of the methods commonly employed help me, and they appear to be based upon a false principle. They generally consist in a repetition of the same discharges, or an exercise of the same subordinate centers. However often we count or repeat the letters of the alphabet, or in thought walk up and

down the same path, the mimic and weak outflow is by the same commissural fibers to the same subordinate centers. If I am ever able to succeed by any device at all, it is by deflecting, derouting, and subdividing the outflow in such a way that it does not flood any single subordinate center. No single train or repetition of thought is allowed, the stream is divided so that each subsidiary center gets such a minimum of excitation that it can resist it, and thus all are calmed. For example, I think, for a passing moment, of each part of my body in succession, and of each function of the same, of each sense, with the origin, course, and result of each sensation. Thus traversing the round, I, as I believe, drain off and subdivide the superabundance of innervation to every possible outlet. Instead of persistently *doing* something, or constantly exercising motor-centers exclusively, it is better to trust to a mimic sensational exercise. Thoughts of personal motion are outgoing and stimulating, thoughts of visual and auditory sensations are receptive and calming. Another device I have successfully used is to imagine myself in midocean, becalmed, alone, not frightened, and looking out over a monochromatic ocean to all points of the compass successively, thinking of all the strange life in the depths below me whose bottom leads on and on to distant isles,—watching also the starlit space above, as it pales into magical sunrises, and the ever-changing phantasmagoria of cloudland flows ceaselessly by.

IX. General Characteristics of Dreams.—Most of my dreams are of actions. I do things, or try to do them, or am the object of the acts of others. Very few are contemplative, intellectual, or purely sensational. This shows that the mimic stage of dreamland, in a general way, is the same as that of the waking life. Consciousness is most habitually employed in the direction of the activities of the

motor centers.* Historic man, even more than at present, has been an active, not a contemplative, reflective, or receptive being. The mimic exercise of motor function by the dreaming consciousness produces for me two types of dreams: First, the clogged, heavy, and impeded, in which the feet are stuck fast or weigh a thousand pounds, etc. I think this is a familiar sort of dream, and finds its *rationale* in the resisted efforts of the organ of consciousness to arouse the subordinate sleeping centers of motion. In the dream we do not know why we cannot lift the feet, or reach the succoring hand; we are only intensely conscious that the foot or hand are sluggish and benumbed—as in truth they are. Consciousness sends its mandate to the Rolandic centers, but there is no response. Hence the genesis of the so-called “nightmare.” Resisted and unresponsive effort arouses fear and further effort. Bodily malposition may also serve to beget the endeavor to arouse subordinate motor centers. A correlated fact may be bracketed here. A familiar dream-experience consists in dropping or stepping off some high place, or falling through the air; and with the drop, or the crash, we awake in fright. If our conception of cerebral action is correct, this would find its explanation in the loss of the habitual checks and control of the lower sense-centers. When awake, consciousness exercises control of the muscles and saves the body from falling. When asleep, the command is also given, but the lower centers and their muscles do not obey—and we fall.

* A dreaming dog presents a suggestive picture: The paws jerk, the lids quiver, the jaws snap, he barks little, short, spasmodic barks, or he growls and whines. I picture the consciousness-center intensely active, the chase in his dream is wild. The subordinate centers are partially aroused by the overflow from the higher center, but not normally functional until such a pitch of excitement is reached that, in the culmination of the dream, all and several are “awakened.”

Not only this, but the danger of falling, the predicament we are in, is aroused by the fact that the inhibition and checks of sense-control do not exist in sleep to keep us away from heights and dangerous places. Consciousness records the *efforts* of will we make, as if they were registered in action, and it sees no difference between willed act and motor fact.

The second class of movement-dreams, or action-dreams, is the reverse of the first, and consists in movements not only unencumbered, but of transcendent ease. The glorious pleasure of supernatural power and action is indescribable. I often awake quivering with the intense pleasure of free, swift, and confident activity. Sometimes it is a sort of skating or gliding across countless miles of country or ocean; sometimes it is a giant-like striding from mountain-top to top; sometimes the perfect eagle swoop through the blue of space, effortless and superb! May this be thought of as either a normal play of the organ of consciousness with its own forces, or as a healthy mimic outflow of innervation along the usual routes to the subordinate centers of motion, which, in comparative exhaustion, absorb the inflow without themselves being aroused to an active outflow of innervation?

It has been a source of wonder that in the classical hashish dream of the De Quincey type an eternity of time is compressed into a moment, and to the rioting consciousness that moment is indistinguishable from the actual detailed facts of a thousand years. In the same way, space broadens, and the body itself, or the room it dwells in, becomes wide as the starlit night. Personality may even seem to double, and thus again enlarge the boundaries and possibilities of experience. Is not all this also a corollary of the anatomic and physiologic conditions of the organ of consciousness? We have memories of waking life only as things and events transpire that memory records: but

the evolution of a tree, or a world, or a life, is a *slow* process. But, to the mind, in the condensation of thought, it becomes an instantaneous thing. We can think the evolution of a solar system in the flash of an instant. It is *fact* that draws this out to ages. In sleep, let us again repeat, facts and all their qualities are lost in the loss of the lower centers of sensation and motion. Hence the mental review of time-stretches and the multitudinously-linked chain of facts becomes temporarily as much of a reality to the dreaming consciousness as if the law of causality were truly operative. It does not suspect that its phantasmagoria is not real, because, so far as itself is concerned, it *is* real. We must remember that consciousness is never directly touched by reality. It only receives the echoes and representatives of reality. In the hashish-dream it is not suspected that the thousand years are not actually passing. It is only when we awake and compare the dream with the slow and droning march of casually-linked things that we recognize that the thousand years were condensed by the wizard of consciousness. Memory is in truth only the memory of psychic happenings, and as these, essentially, are almost, if not absolutely, timeless and spaceless, it follows that the passage of a cycle of material events may be swept through the hour-glass constriction of consciousness in a brief moment. Or again, we may in dreams wish or will to do a thousand things in a flooding instant of boundless desire, that a world and an eternity could not realize under the conditions of causality. But it is apparent that to the dreaming consciousness this crowded rush of desires and willings is as real, apparently as subject to time and its laws, as if the lower centers were not asleep. It is these lower centers that give to it the term of comparison and enslave it in the treadmill of reality. In sleep the noble slave is temporarily set free; sleep seals the eye-lids of its masters, the spirit rises out of the chains that bind con-

sciousness to reality, and the divine slave at once comes into possession of the universe as its absolute plaything, whilst over its fancy hovers the superb child's hallucination that the paltry nothings of its imagination are real suns and stars and worlds, the actual march of cosmic events and the pomps of eternal time! Its mimic play and lightest wishes instantaneously become incontrovertible and unquestioned facts. Had they reasoned of the world of dreamland, those philosophers that resolved the world, with its laws of time and space and causality, into mentality, would have been wiser than they were.

A pronounced characteristic of all dreams is their great lack of logical correspondence with the laws of the real world. In dreaming this is not recognized. The most intolerable absurdity seems perfectly natural. One face or person fades into another, we take hundred-mile steps, we do things outrageously *mal-à-propos*, without a suspicion of their incongruity. I gather from this that the waking activity of the organ of consciousness is regulated and governed by the multiform stimuli of the subordinate centers. In a certain sense and in the light of evolution, the organ of consciousness is an outgrowth and product of these subordinates. In the waking life their messages must continually be sent to the higher unifying center. The product of their combined influence must be inhibitory and regulative. In this way there is produced the sanity, the correspondence with reality, that marks the orderly, mirror-like function of our waking consciousness. The essential characteristic of sleep is the nonactivity of the subordinates, and hence the unregulated and fantastic mimic life of the organ, acting without data or content. The restraining checks and the completing fullness of the influences of the lower centers are removed, and hence the inevitable result is inconsequentiality, illogicality. Another reason for this fantasticalness lies in the fact that even in

waking the work of consciousness consists in no exclusive occupation with one set of stimuli. Strictly speaking, there is no habit of consciousness. It must remain at the instant service of any or many orders and kinds of control, whether of sensation, memory, or various motive. When removed from the inhibition and control of reality, consciousness could not be supposed to show an order and logicity of succession it had never had in real life.

Depriving it also of content or *matériel* would all the more emphasize its whimsicality. In dreams the sense of the incongruous or the ludicrous is with me of the extremest rarity. The humorous is the incongruous, and this is a failure of correspondence with the real. If the comparison with reality be excluded, then, though every dream be incongruity itself, recognition of the fact by the dreaming consciousness is infallibly excluded. I have sometimes been awakened by my own laughter at some apparently highly absurd thing, but when awake I have been just as much disgusted at myself to find the plainly-remembered dream in reality contained no vestige of the humorous.

X. Differences Between the Dreaming and the Waking Consciousness.—I preserve in my dreams most of my stronger esthetic, deeper moral, and passionate feelings or emotions, but with noteworthy differences. These differences may perhaps be summed up by saying that in dream-land the factitious elements and refinements of a superposed civilization fall away, leaving in relief the nude realism of primitive and disingenuous personality. For example, the occasional prevalence of generative instincts might alone convert one to the doctrine of biology covered by the adage, *omne vivum ex ovo*. Assuredly, restraint and scruples concerning such matters are not known in dream-land. The chastest do not blush there. I rarely have any care for clothes or nudity there, and the *bizarrierie* of my dream-plights in this respect often amuses my waking con-

sciousness. In one way I think it remarkably confirmative of my general thought that, as the savageness of the brute and the selfishness of the animal come out in intoxication, it is not so in dreamland. Rage, destructiveness, tyranny, delight in power—these are almost never present. The reason is that the power-producing or motor-centers are asleep. Neither is hypocrisy known in dreamland. Falsehood is largely a product of civilization. There are few of us that are not forced into subterfuge, peccadillo, and even cowardly lies, by the conventionalities and disguised warfare of civilized life. Consciousness is in truth ethical and unselfish: it holds the balance between the selfish greeds of the lower centers. In sleep these last are forced to stop their wranglings and their competition for place and recognition, and it therefore never occurs to dream-consciousness to lie or deceive for selfish reasons. Morally, dreamland is a brighter country than our noisier world. If dreams tell us anything about our essential personality, they argue against our innate depravity. I think I am more kind and careful of others' rights in dreamland than in awakeland. In the last country I have to endure many grievous hurtings of my feelings in the matter of cruelty to animals. In dreamland my indignation at it is constantly aroused. I may see nothing absurd in a fireman compelling his beautiful horse to pull the fire-engine by a three-tined fork thrust through the animal's nose, but I awake, boiling with rage and vowing to arouse society to a recognition of the shame of it all. Unless feelings of profound pity, contempt, indignation, etc., are aroused, I find that in dreamland I am, not immoral, but unmoral. Unless a lie hurts somebody in a way to arouse fervidness of feeling, I do not greatly hate the lie or the liar. But if the lie produce injustice or wrong, I hate that, and the author of it, though not because of the falsehood.

In my dreams I have even killed others with utterly no

compunction or regret, but with satisfaction that I had righted some wrong, or vindicated somebody, or succored the weak. I remark always the most unquestioned and enthusiastic acceptance of the fundamental passions of pity, love, justice, indignation at wrong, etc. These great forces of mental life have stamped their impress so deeply into the structure of the organ of consciousness that, even when the stimulus of the fact is absent, when the subordinate centers are hushed in sleep, and sensation is non-existent, there still remains the play of nervous activity along the old lines, and with sufficient intensity to light up again the emotions that once blazed forth at the touch of the real.

As to the reasoning power, I find my dream-consciousness wholly devoid of it. I have heard of mathematicians working out incomplete problems in their sleep, or the key to some scientific mystery or financial vexation reaching one at that time. To say the least, such cases must be very exceptional. Judgment, weighing complex probabilities, induction by close lines of logic from manifold details to a single cause or principle,—all this presupposes a convergence of myriad nerve-currents of many and disassociated points, the focalization of many sensations, memories, past and present, etc., etc. To think is to ponder, and weighing is the essential characteristic of all judgment. But the dreaming consciousness is without judgment. It is always the incongruous with which it deals. Its workshop turns out good work only if good material is furnished it. It is fancy, imagination, feeling, sentiment, but never ratiocination. The subordinate centers that furnish it with material, that give it legality, and hold it to reality, are sleeping. The factory is without "raw material," and the hands go holidaying.

In matters esthetic my dreamland is a revelation to me, and in this respect alone frequently transcends reality.

I have never taken a dose of *cannabis indica* or other cerebral stimulant. I have no need of such things. Released from the bonds of the actual, my imagination wanders in dreamland among supersensual delights and basks in the light that never was on sea or shore. I note this peculiar fact: in my enjoyment of dreamland-beauty there is an element of fervor, an implication of the feelings, that I can but barely remember, not experience, as I stand before the most beautiful of real things. May the reason of this be, that in addition to the real being always far from perfect, there is in no waking human life utter oblivion of its painful and tragic elements, past or present? Every sense has been outraged, every center of the brain has *suffered*, and even whilst these may send their most exultant peans of major joy to the higher center of consciousness, there must ever intermingle the minor notes and discords of want, insatisfaction, and pain, that keep its harmony from being perfect. But when all sources of such discords are hushed, when these lower centers are asleep, the freed consciousness can revel in joyousness under the fleeting illusion that its mimic life is real.

XI. Preponderance of Visual Sensations.—Motion and vision are the two great factors of mental life, and it is suggestive to find that those animals that so long as possessing motion, keep their eyes and the intelligence that coexists with vision and motility, when they attach themselves permanently to one spot the eyes and intelligence are lost. Parasites are usually eyeless, and vegetable parasites are without chlorophyl. The whole wretched order of microbes, molds, and fungi, the curse of the physician and of the world, are parasitic and without chlorophyl. The insane, the idiotic, the weak-minded, the epileptic, have, relatively speaking, very subnormal vision and a defective ocular mechanism.

Above the motor element, the predominant characteristic of my dreams is that they are made up of things seen. I do not remember ever to have dreamed of an odor, pleasant or foul, though often dreaming of perfumed or malodorous things. In the same way, though I have dreamed of eating, I preserved no remembrance of impressions of taste. The apple I ate—I cannot now tell if it were sweet or sour. Tactile sensation is somewhat frequently a component of dream-phenomena, but generally only in conjunction with another sensation or feeling that smothers it. If I am struck by another, the feeling or pain, if existent, is at once lost in some psychic emotion, of anger or fear, etc. Pain cannot enter dreamland, because the centers that feel pain are asleep. I never remember to have remarked in dreams that a thing was exceptionally and peculiarly smooth, or hard, or sticky, etc. I shrink less from touching a foul thing in dreams than in real life. I cannot remember ever to have been cold or oppressively warm in dreamland. If I shiver from cold or am too near a fire I note especially the motion, or sight, or perhaps the feeling of the shivering instead of the cold, and I remember the danger, or the vision of the fire, not the pain. All of this is consonant with the rerepresentative function of consciousness. The senses are represented in it only when awake. As to hearing, few or none of my dreams contain any distinct records of sounds. I can express it no better than to say that the results of hearing are manifest, but not the sounds themselves. I speak and am spoken to, and act accordingly, but I am never able to recall any *timbre* of voice, any inflection, emphasis, or pitch that causes the voice to be, at the time, thought of as remarkable, or that gave its noteworthiness, if it had any, enough vividness to project it across the bridge of awaking into a work-day memory. When awake, nothing so fires

me with uncontrollable emotion as the music of Beethoven, Wagner, or Franz. I cannot remember ever to have heard music in dreamland.

But how different it is with the sense of vision! Everything not motion—and that is largely so—is a thing seen. How empty and destitute must be the dreamland of the congenitally-blind! To me vision gives dreamland all its beauty and most of its interest. It could hardly be otherwise, since the same is true of the waking consciousness. Intellect, indeed, is almost entirely formed of visual factors; every component of what we call psychic life and civilization is largely the product of vision. Language and the letters of the alphabet themselves are the records of things seen. Vision is at once the most metaphysical of real, and the most real of metaphysical things. Astride a ray of light Puck passes in a flash from matter to mind. The library of the soul, memory, is a picture-gallery. An absolute monochromatic world would force the spirit to suicide. Had all eyes been absolutely color-blind Psyche would not have been born. It is the associate fibers from and to the visual center that bind together the world of mind and the world of matter, and that loans life its value, and crowns it with its one unalloyed delight. We sleep at night when the eyes, the great awakers, ministers and producers of intellect and life, are least utilizable. Few people, and only those of stolid and blunted sensibilities, can sleep in the light, even with what darkness closed lids give. It is interesting to see how all living forms, both animal and vegetable, dwindle to wretched caricatures of life, when, eyeless and colorless, they keep up existence in caves and in the sea-depths.*

XII. Character, the Soul, and Consciousness.—In

* See Packard, "On Certain Factors of Evolution," the *American Naturalist*, September, 1888.

a superb story of Gautier, a lover, by his power of magic, is able to lull into a death-like trance the being of his successful rival. This lover then steals the body of the young husband, his rival, and, leaving his own soul in the entranced body to care for it, the passionate lover plans to trick the faithful wife. The conception is a proof of genius! Think of it! The lover stole a body that thereby he might steal a love, that, in the absence of his own body, was of course not carnal. On the part of the husband one meets a multitude of questions, principal of which would perhaps be, How far would he have been cheated had the thief been successful? On the part of the lady strange trials and mystic queries also arise. Remember that if only her husband's soul were absent, there were present every trick of motion, play of expression, *timbre* of voice, nay, every habit of mind and body, that is in any way controlled by the laws of corporeal and nervous organization or by heredity. What *would* be different? Both lovers would be equally kind, lovable, and loving. Both would express their inner feeling by the same acts and by the same mechanism. Some one said that the Yankee worked badly where soul and body touched. Would you suppose the thieving lover's soul could not avoid an awkwardness in handling the mental centers and, through them, the body he had stolen? I bring the idea forward here to illustrate, firstly, how far "character" is a matter of flesh and nervous organization; and, secondly, how little there is in the so-called "soul" but an impersonal force. If two of your best friends could change "souls," would you ever find it out? I confess that after a rigid exclusion of the elements of character that necessarily inhere in the action of the body and of all subordinate motor and sensory centers, I find, if anything be left, it is a very impalpable and impersonal somewhat. Now this is precisely what sleep does. If, therefore, the dream-

ing consciousness could have its photograph taken, it would have no recognizable or distinguishing trait of expression. We should never know our disembodied friends. Dream-personality has no individuality. And thus, through physiologic psychology, we catch a glimpse of the profound truth that, at heart, we are all the same. One common unity lives in us all, and our jealousies, bickerings, differences, and hates are but the expression of the accidents of body; our love and kindness, the expression of the one life that feeds all our lives. Dream-philosophy teaches religion and sympathy. There is nothing more noble or more philosophically demanded of us all than, to one another, simple kindness. It is at once the most human and the most divine thing in this sorry world.

It is evident that a cluster of nerve-cells in the cortex of the brain whose function it is to receive stimuli and answer the same with messages, *e. g.*, to a muscle to contract,—it is clear, that such a mechanically acting center is not the “soul,” or even a part of it. A paralyzed man is just so much a man spiritually and mentally as before the atheromatous blood-vessel drowned the Rolandic convolution. Paralyze every bodily muscle, and the fact remains essentially the same. But it is not so with the frontal lobes of the brain. Render them functionless by trauma, disease, or the hypnotic enslaver,—and consciousness, mind, soul, give no evidences of existence. Slice off the frontal portions of the brain of the poor pigeon, and life, power, habit continue, but not what it had of mind. We may be thankful that it is impossible and useless to slice from behind forward and leave only the living organ of consciousness. But this is almost exactly what sleep does,—harmlessly and lovingly, however, and it is of the greatest interest to see what a world is left after all peripheral stimulation and subordinate centers are stilled into temporary death by its kind hand. Dreams show us how great is the

world, how shadowy a thing is the essential *ego*. The soul, deprived of the body, seems quite as unreal and phantom-like as any of Charon's passengers. It is so profoundly dependent upon the crude senses and experience, upon memory and motion to give it regulation, order, and reality. As, one after another, sleep strips us of these things, that at best are but supplies of soul—so paler and ever thinner, ever less individual, grows the *ego*. Picture-making in its last analysis is not strictly psychic, and yet a visionless world would be absolutely a soulless world. Dream-consciousness is consciousness without adventitious aids, physical props, content, and checks,—it is consciousness, *per se*; it is, in truth, a fluttering memory of a memory of past experiences; its life a mimic play; its phantasmal existence is upborne upon the ghostly wings of past sorrows and joys, and tied to reality by the tenuous thread of a momentarily interrupted sensation. Its master, the body, suddenly tugs at the silken cord, and from freedom it swiftly descends and slips into the yoke of reality, attentive to the thousand demands of its imperious and all-precious sovereign!

POSTSCRIPT.

To the Editor of *The Open Court* :—

Among many interesting communications to me regarding my paper in a late number of your journal there is one of peculiar interest from one of your subscribers in England. He states that he has been able to conquer an insomnia of long standing by the device of looking downward when trying to go to sleep. He was prevailed upon to try the device of, in fancy, watching the breath escape from his own nostrils. He found this successful, but concluded that the rotation of the eye downward was the essential factor. Thinking of this, I have wondered if this were not something more than an individual idiosyncrasy,

if, indeed, it were not founded upon a true basis of cerebral habit and necessity. That the eye is the most easily reacting of all sense-mechanisms is a truism, and that of all it is the most intimately connected with all cerebral and psychologic processes. Not only this, but the facts of functional amblyopia from prolonged exposure to light, such as moon-blindness, snow-blindness, etc., show how injuries to the eye is such continuous stimulus. Neither for the objects of shutting out the external world of light nor for protection to the eyes is the darkening of the lids sufficient. Sound sleep and retinal safety demand either a complete external darkness, or a rotation during sleep, as my correspondent says he has found in his own case, of the eye-ball upward beneath the arch of the eye-brow. I believe it has been experimentally found that in sleep the globes do rotate upward. It may, however, be true that the necessity was greater and the fact more constant in primitive or savage man than in the civilized man of to-day. The savage slept more frequently in the open air. But if true in either case, the mechanism whereby this act was done required a constant expenditure of force to effect it, and therefore a watchfulness, an activity of nerve centers somewhere, that rendered the whole cerebral machinery less passive than if it were not compelled to keep up such continuous functional output. Somnolence was therefore less complete, the restorage function more drawn upon, the "sentinel" was more alert. If, therefore, such continuous innervation of the superior recti serve to keep the cerebral organism from sinking so speedily or completely into slumber, then relieving it from such duty of out-going stimulation would thus serve to becalm and quiet it. Reversal of the habitual bulbar rotation would thus serve to relieve the centers of the superior recti and divide the stimulus to the inferior, thus setting up a sort of relief and rest for the too continuously acting center. It is true that

during waking the superior rectus has the least work of all the muscles, and therefore is better able to take up the continuous work of the night; it is also true that excessive innervation of the inferior rectus would be as arousing as that of the superior, and, finally, it may be said that the habit in the civilized man, sleeping as he does in closed rooms, might be dropped; but there remains as answer that continuous contraction of a muscle means waking activity of the center and its correlates; that the lower rectus will only be kept functional while the would-be sleeper is consciously making the effort; and lastly, that old habits of nature or man are not soon stopped. Would not a better plan than that of my correspondent be that of slowly and rhythmically putting *all* the muscles of the eyes into alternate function, each for a few minutes at a time?

To the Editor of *The Open Court* :—

The scholarly article entitled " Dreams, Sleep, and Consciousness," which appeared in a late number of your paper, recalls a reminiscence of my own which seems to confirm Dr. Gould's opinion, that sensory communication may be had directly with (the organ of?) consciousness without connection or communication by means of the ordinary senses of perception. Perhaps Dr. Gould's theory of the manner in which this takes place may be modified by subsequent research, but the fact itself can scarcely be questioned.

Some years ago I was living in a California mining-town of several thousand inhabitants. The greater part of the town consisted of frame buildings packed closely together, offering the most favorable conditions for the rapid spread of fire, and the total destruction of the town should fire once gain a headway. This fact was fully appreciated and several volunteer fire-companies were equipped by the citizens. It is hardly necessary to say that every ear was

alert for the clang of the fire-bell, and at its first sound there was an instant gathering of volunteers.

One night in midsummer, after I had been several hours in bed, my usually dreamless sleep was suddenly disturbed by a vivid dream of fire. I saw the flames break out from the roof of the building, and, in my dream, ran to the engine-house and pulled vigorously at the ropes that sounded the alarm-bell. The resulting clangor was so loud that it awakened me, but the sound which I heard in my dreams was not a dream-fancy,—it was the actual ringing of the bell, and my first act of consciousness was the perception of this fact.

Now, it is incredible that a chance dream of fire could have occurred at such an opportune moment. Such a coincidence is, of course, possible, but as improbable as the chance coincidence of certain Fraunhofer lines with the spectrum of iron. It is far more reasonable to suppose that the strokes of the bell reached my consciousness first by some other channel than the auditory nerves. The vibratory impact aroused consciousness,—perhaps imperfectly, but still more faithfully than in the case of Dr. Gould and his Thomas cat. In the latter case consciousness was lured into the belief that the discordant cater-wauling was the sweetest of music; in the former there was no deception. The first alarm struck upon my consciousness was the alarm of Fire! In this instance consciousness was in the wrong as to locality and surroundings,—for while the dream-fire was consuming the school-house on the hill, the real fire was in an unoccupied building some distance away,—but it was not deceived as to the fact.

Dr. Gould mentions also another peculiar feature which perhaps may be reckoned among dream-phenomena—namely, the dream of impending danger which leads to the conscious necessity of awakening. This condition, which

is usually brought about by an interruption of the function of some nerve-trunk, is one of which most people have an experience at some time or other in life, and all who have passed through it can bear testimony to the energy spent in rousing the body into action. Dr. Gould premises his description of this phenomena with the statement that he lies prone upon his back, and then says he can at first move only one or two fingers, or perhaps sway his head. In my own experience, while the general conditions are the same, the manifestations are different. I invariably sleep on my side, and in the process of awakening, begin by moving the foot of the upper limb. I am not able to move head or hands in the least, and the reason is the same as in Dr. Gould's case. The stimulation of the motor nerve-centers, although to consciousness the result of a tremendous expenditure of energy, is but a slight one—hardly more than sufficient, in fact, to perform its work. Directed by consciousness, it must therefore exert its effort in that part of the body which, because of its position, is most easily moved, or in the least constraintment of position.

In both of the instances noted, the facts show that consciousness may act and react without the intermediation of the lower centers. In the case of the fire-alarm, consciousness was aroused and received a message through the sensory fibers; in the nightmare, it was on the *qui vive*, putting forth almost superhuman efforts to stimulate the inert and irresponsive motor-centers into action.

J. W. REDWAY.

HUMAN LIFE UNDER DENIED SENSATION.*

The writer once experienced an odd series of feelings that brought vividly to mind the fact that life and emotion and happiness are compatible with great differences in and deprivations of ordinary mental stimuli. A social gathering was going on in a large hall, and the sounds of excellent music, dancing, laughter, and gayety came from this room where a hundred or more happy folk were passing happy hours. Upon opening the door and being ushered into the hall the room was found to be as dark as midnight. Not a thing could be seen. It was the social hour of the inmates of an institution for the blind! The first uncanny, creepy feeling was soon dissipated by the thought of congratulation that indomitable mind and spontaneous emotion, though deprived of light and vision, could still find satisfaction and play through the medium of indirect sensation. Soul still conquered sense!

The same thought is exemplified and emphasized by a consideration of the report of the Convention of Deaf-Mutes, lately held in Allentown, Pa. One is apt thoughtlessly to pass over the beginning of the report, that says, "The meeting was called to order by the president, who rapped vigorously on the desk to attract the attention of his audience." An audience of deaf-mutes called to order by a noise! Those who see a blind man tapping the street in front of him as he walks are likely to think that this is solely to avoid objects that the cane may strike. It is also to avoid objects that the cane does not strike—because to

* From the *Medical News*, October 24, 1891.

the blind man's ears and hand there is a *timbre* from blows upon the pavement near its edge, near posts or steps, that is very different from the resonance when the blow is not near such objects. It is said that blinded bats are able to fly unharmed, avoiding objects in their flight by means of the perception of an increase of barometric pressure of the air close to those objects—so sensitive to variations of pressure is the expanded interdigital membrane. (The experimental blinding of the bat, however, was not necessary, because millions of bats winter in Mammoth Cave, miles from the faintest ray of light.)

A suggestion is indirectly aroused by this fact as to the "relaying," if one may so speak, of crude and faint stimulation by the mechanism of the nerve-ganglia and centers. There is a nervous device that reinforces and transforms whilst also repeating the subtle, weak, and in themselves meaningless, hints of the external world that we call sense-impression. It is the living prototype of the electrician's "relay" and microphone combined. Thus all man's mechanic devices are but poor imitations and repetitions of what Life's vital forces have long ago brought to wondrous perfection.

In the Deaf-Mutes' Convention prayer was said, the roll called, addresses made, business conducted, and long sessions held—all in the sign language—all in silence! "The amended constitution and by-laws were adopted *after a lively debate.*" If present, our blind friends would certainly have thought the meeting very strange and stupid. But the success in raising funds for a proposed home for aged and infirm mutes, and the discussion of other worthy objects, made the gathering a very interesting one for the attending delegates.

According to the Paris correspondent of the London *Times* the method of analyzing motion by the chronophotograph, which has been so happily applied by M. Marey in the

case of moving animals, such as horses running or birds and insects in flight, has recently been employed by M. G. Demeny, a preparator at the physiologic station of M. Marey, to examine the movements of the lips in speaking. He has obtained results which show that the form of the mouth is quite different for the different articulate sounds. With these photographs combined in a zoetrope he has reproduced the movements of the lips by synthesis. An ordinary person finds it difficult to read the words by the animated pictures; but a deaf-mute who has been accustomed to read from the lips of a speaker found it easy to do so from the photographs. A young pupil of the National Institute of Deaf-Mutes in France could read the vowels and diphthongs as well as the labials. The first experiments were, of course, not all that could be desired; but, in bringing the matter before the French Academy of Sciences, M. Demeny expressed the hope that in continuing his researches he would be able to develop a new method of educating deaf-mutes by sight from more perfect photographic images. Obviously a magic-lantern lecture might be delivered to an audience of deaf-mutes in this way.

The encouraging and deeply suggestive fact of rescuing the faculty and power of speech in these deaf-mutes is one that must command the sympathy of all. There is no limit to the ingenuity of Life and to her triumphs over adverse circumstances and deprived stimuli. We have all read of another striking example—very different in kind, of course, but illustrating the same great truth. One of England's greatest statesmen was blind; so was a great numismatologist; and another of her great men, a hunter and rider of unexampled daring, a peerless sportsman, an excellent business man and active administrator, had neither arms, hands, legs, nor feet. One is reminded of Emerson's cool answer to the Millerite who excitedly told

him that the world was to come to an end that day: "Oh! well," said the philosopher, "we can get on very well without it."

It would seem that if loss of sight were added to loss of hearing and speech, naught but tragedy and melancholy could be left, or that the routine life of the lowest functions of nutrition, etc., would persist. But there are few happier and brighter-minded people than Laura Bridgman was and Helen Keller is. Another, a man likewise deprived of these great avenues of influence from and communication with the external world, without which life to us would seem so barren, traveled all over the United States alone, raised a family, and lived out his period of brave and satisfied life. He could talk to anybody by means of the ingenious device of tattooing the English alphabet upon different parts of his hand. Words and sentences were spelled out and recognized by the positions of the letters touched.

The emotional life of these imprisoned souls, cut off from so many relations and avenues of interchange with the external world, must be all the more vivid and hypersensitive. A coarse jar of the hyperesthetic receiving end-organ of sense is transformed into a rude thunder by the highly attuned and delicately responsive microphone of the inner sensation-making mechanism. Thus the possibility of causing sharp sorrow is a necessary concomitant of the ease of eliciting joy. It is the glory of civilization to care for such and shield them from pain, and it is the delight of medicine to minister to them its healing. It is hard to sympathetically understand and realize the inner life of these almost windowless minds. How strange must seem to them the dreams and somnambulisms of never-to-be-awakened emotions, the dumb reaching out toward reality of denied possibilities, the unsatisfied hungerings of imprisoned sensibilities. Their

minds must be thrilled by dim hereditary echoes and the far-away caresses of ghostly ancestral hands. With what pathetic half-responsiveness do these shut-in souls catch the shimmer of long-departed life, that comes to them like the last faint evening flushings reflected from distant mountain-tops to valley-dwellers that are in the night.

IMMORTALITY.*

If you sit down in the quiet of your own room and calmly ask yourself what it is in reference to a life after death that you really desire and what you may reasonably expect, you will probably be surprised to find what a blank your mind is upon the subject. I doubt if you will find that you inwardly desire it, in the same manner, for example, that you desire wealth, or fame, or beauty. You have grown up in the belief that it is right to desire and believe, but that, you know, is quite a different affair from actual yearning.

Nearly every one puts the thought aside as beyond solution. One says, "My thinking will not change the fact, nor my longing bring it about. The duty of the passing day is all I can fulfil." Under this cover of postponed examination the world has grown as indifferent to the question as it was formerly engrossed by it. Fear of offending delicate sensibilities and established beliefs keeps the doubter and modifier silent; whilst the extreme of the omnivorous believer is set over against the out-and-out denier. But the great majority of people are neither believers nor disbelievers, but indifferentists—slowly settling toward an agnostic noncommittalism that is destructive of all intellectual and moral earnestness.

It is my conviction that this abrogation of curiosity and examination is a most culpable and dangerous fact. If we live after death it is of tremendous importance; if we do not, it is of no less vital import, and the belief, the disbelief,

* From *The Monist*, April, 1891.

or the evasion is of the most constant influence, unconsciously, subtly, upon every thought and act of every day's living.

Suppose now we divest ourselves of the creeps and shudders usually accompanying a discussion of death and immortality, and fearlessly test the common dogma with a little analysis in the light of scientific research and reason. Let us suppose you are a believer: what is it you believe? You desire: what is it you desire, and how far is your desire feasible? You are convinced: but what is the truth? If possible, in what way and to what extent is a future life possible? If attainable, by whom and by what means? Moreover, the *kind* of belief makes all the difference in the world. I have read somewhere about an African chief who killed his wife's lover, and was defeated at last by his wife's unswerving belief in immortality—she committing suicide in order to join her lover. But the chief was equal to the emergency, and he in turn killed himself in order to follow the pair and break up their *tête-a-têtes* in the other world! It all depends upon what you propose doing with the future life after you get it. You might just as well be digging clams on this earth as "singing Hosannas around the throne" in heaven.

Do you believe in or fervently desire what, with splendid bravery and *abandon*, the old creed called "the resurrection of the body"? Terrible counter-queries arise: At what age in your life would you choose as best representing the ideal body for your resurrection? Would you prefer your body as it was when you were a child, when youthful, when mature, or when old? Moreover, it is changing every minute, this body. It is estimated that something like five million blood-corpuscles die every second of your life. Even the two or three pounds of minerals in one's bones are only a little more permanently fixed. All component parts are undergoing change every instant: they

soon become grass, grain, or tree, passing again into others' bodies, and so on forever. Is it the form and feature you desire to preserve and not the constituent particles? But form and feature change every day or year, and are as impossible to fix as the atoms themselves. Indeed, is not the whole matter put beyond choice by the evident fact that unless by the fiat of an extramundane deity the only moment possible to fix the bodily form in the mold of eternity would be the death-moment? And yet this were the most undesirable of all seasons, since at that hour the body is in the weakest, most useless, and most wretched condition of all the hours it has served us. Supposing, therefore, that you are so in love with your own body that you would wish to call it into life again and forever; we see at once that no moment or phase of development could be chosen, except perhaps the dying moment, the least desirable of all, and that the particles of one's body have served their turn in myriad other bodies, each having an equally valid claim to his "property." Besides this, the absurdity of the whole is emphasized by the crushing fact that all the organic matter of the world has been used over and over for bodies, and the earth has not enough hydrocarbons to fit out again with bodies a small fraction of the souls that have lived upon it. Doubtless the combined weight of all the organic bodies that have lived on the earth would be many times the total weight of the globe, including its minerals, elements, and gases. It may be frankly admitted that no bodily resurrection is possible.

And it is as certainly undesirable. The old dogma was the crudest materialism, wholly unworthy of the credence of those who pretended to believe that God was a spirit, and that they were his children. The belief in bodily resurrection was a natural concomitant of the age of sensualism before the mind and spirit had risen to their modern heritage. The desire for such a resurrection

stamps the person with a self-confessed imperfection of mental and moral development. The impossibility of such a resurrection is one of many proofs that life is no sensualist at heart and that ideality is the final outcome, the trend of actuality. Nature compels us to take wings, though the sluggish Psyche lingers lovingly in the pretty little cocoon of materiality she has built about herself.

Is it perhaps your understanding, reason, or intellect that you desire to perpetuate forever? Frankly, now, are you so in love with your mental outfit? In your more modest and sane hours are you not sadly conscious how very imperfect it is? While we are young and very conceited we may be filled with self-satisfaction and trust in our own judgment, but as the years drag by, we, looking back over the past, grow more and more conscious that our intellect is not to be trusted. Think of the interminable series of blunders of which your life is the record? How poorly you have misjudged people and circumstances! How your reason has fooled you many times and again! How many illusions and delusions have you lived through! With what sad clearness you now see your former stupidities, and with what blindness you fail to see your present ones! Looking about you, you find others equally as gifted as yourself holding your opinions as loathsome. Looking above you, you see the most intellectual and the most educated diametrically opposed in their opinions of God, man, and nature. Two great men, two brothers, learned and trained in dialectic and logic, soon grow apart. One becomes a cardinal of the Romish Church, accepting Papal infallibility and a thousand such absurdities, the other as firmly convinced that the fallacies of the English Church are God's gospel. Looking below you, you see the great mass of men wrecking their minds and lives upon a thousand outrageous beliefs and prejudices. There is no sadder spectacle in the world than this—that the people love error.

But each one, with imperturbable conceit, is convinced that he sees better and plainer than another. Every partisan, Democrat or Republican, has no sort of doubt that he is right about every financial or governmental measure, though he has never studied finance, history, or political economy five minutes. He does not dream that he is a dupe of the politicians and of his own *lack* of intellect. All history is a tangle of such poverty-stricken intellection. One can but be amazed at the proneness of everybody to see things and do things every way but the right way. And this is the kind of a mental equipment you would stamp with the seal of eternity!

Possibly you may protest that it is a more perfect and purified intellect that you wish. Ah, yes, but that would not be your intellect. You want to be made over, made into another person. That would not be your immortality, but that of another. That would imply that it is pure intellect and perfect, in the abstract, that you are interested in. Have you shown much interest in that sort of intellect in the past? If you wish such an immortality of a perfected intellect you must certainly possess it before it can be made everlasting.

Perhaps, again, you will say that it is the ever-progressive, ever-growing intellect you desire. This is subterfuge. That is not what you wish but what you would take in default of your first choice. Lessing said that if God held out to him absolute truth in one hand and in the other the everlasting search for truth, he would choose the latter. But the condition of everlasting search would be the condition of everlasting imperfection of intellect. Lessing's choice seems to me impious.

I therefore conclude that at heart you do not wish to eternalize your crude, imperfect intellect, and that the sole method of getting an exalted and perfected intellect is to cultivate it here and now. Have you in the past obeyed

reason and not passion or self-interest? Have you studied logic, history, and science with a sincere desire to do your political and social duty, and to free yourself from prejudice, error, superstition, and conceit? If not, why should God suddenly endow you with a perfect intellect ready-made? Is it God's way in this world to give excellencies unasked and unearned? Rest assured He will not do it at your dying hour. It is no particular merit in you to die; why should you be rewarded with a new intellect then?

Or, again, you may say that it is not so much your intellect that you wish to make immortal as it is your emotional nature, affection, etc. Love and friendship, you complain, are cut off by death, and the tendrils of the heart die because they find nothing to cling to or rest upon. You would like to renew beyond the grave the love and sympathy that has made the earth-life endurable, and even beautiful. Now is this, in very truth, just so? Are you really satisfied with your devotion and love? Have not your outgoings of the heart been quite fickle, illogic, selfish, and calculating? Has not your love and gratitude been often a lively sense of benefits to come? Has your love to woman not been of the "Kreutzer-Sonata" type, a little better and more subtly-concealed, perhaps, but at heart the same? If you are a woman, have you been seeking to get or to give love, and has your little affection been but payment for protection and a home? Have you chosen true and noble friends and been true and noble to them? Has your charity been but alms-giving without kind sympathy and helpfulness? Have you as married folk, perhaps, been, as the cant phrase has it, "devoted to each other," but oblivious of the duty of affection toward the rest of the world—grinning examples of *égoïsme à deux*? Is your family a fetich, an enlarged sort of selfishness? Do you at heart care much for anybody except your own precious self? And a too exclusive love, even

of the purest type, may be sin in God's eyes. If you bind all your affection upon one weak life you risk a precious value upon too single and narrow an object, and deprive others of the sympathy that need it more. "Just wrapt up in one," as the sentimental jargon has it, is often, if not always, a pleasant way of great sin. Affection may become morbid—a disease—quite as well as any abuse or exaggeration of any other characteristic.

I take it that they who are the most satisfied with the strength, purity, and constancy of their love and emotional nature are precisely they that have neither actual strength, purity, nor constancy of sentiment, and are thus accurately they that should not have immortality.

Lastly, if neither body, intellect, nor the affectional nature are such as you wish made eternal, are you any better contented with your moral nature? The question at once raises a smile. The feeling of our own ethical unworthiness has crystallized into the great Christian dogma of Christ's vicarious sacrifice: in the words of the old hymn, "Jesus died and paid it all, all the debt I owe." No man hoped to get to heaven on his own merits. Much of the zeal of religion has consisted in the joy of the belief that by a sleight-of-hand trick a big sponge of forgiveness was wiped over the ethical debit and credit account by the lacrimose deity, whose occupation, as Heine said, was to forgive. History is one long, monotonous list of man's sins and inhumanities. I think it probable that you will not urge the ethical aspect; I would leave that plea aside. We all know that we are very much like a lot of pigs, each after the most and best corn and the warmest bed. The amazing immorality of trying to get to heaven on another's merits was the most brazen example of how little heavenliness there was in the heaven-hunters and heaven-scalers. Of course, too, the desire for heaven itself, the desire for one's happiness, was immoral when conditioned upon the

misery of others. Nature in this respect is better than man, denying him his childish materialistic desires and forcing him to wait for immortality until he can learn to live in the spirit and seek no selfish heaven.

Just as the body is ever changing, and it is impossible to seize upon any hour when we could eternalize it, except at the undesirable death-hour, so it is the same in reference to intellect, love, and morality. There are no two days in life when we are the same. As to intellect, we have little before adult life is reached, and most people have little after fifty or sixty years. It is proverbial that no one changes his opinion after that age, but lives on old prejudices and ideas. The mental powers get into ruts and habits, true reason being abrogated. As to love, we laugh at our fickleness, and our habits and ideals of friendship get sordid as each year strips off the freedom and expansiveness of youth and the dear, cold ghost of self is more exclusively worshiped. And our ethical standards change with each day's passing. We have at every hour to clutch ourselves by the throat and cry, "Stay! Who art thou?" And lo! while we ask our protean self the question, we have become another. We seek perpetuity of existence for something ever becoming other. We seek personal identity after death, but we have no personal identity before death—how then can we have it afterward? Do you not see that what makes you recognizable, different from other individuals, and what would make personal immortality possible depends upon the accidents of organization,—depends firstly upon the bodily peculiarity, and secondly upon imperfections of mind that you do not wish to perpetuate? Twins sometimes wear knots of ribbon as signals whereby their friends may recognize them. Our faces and bodies are but such little symbols or signals that our souls have hung out for the day. Divest your best friend of his body, and would you recognize him? Have you

ever thought how the photograph of your friend's soul would look? If bodily form and imperfections make up the most of what we call individuality, it becomes evident that in casting off imperfection we become less narrow, less individual. As you become freed from the cramping littleness of self-love and the bonds of self-gratification, as you rise into the life of the spirit, you find yourself less individual. One fitted for a true heaven would not care for the old immortality. What is good to carry over into the future life is not so much personal identity as personal nonidentity, not so much the imperfections that make us individuals as the perfections that free us from individualism. We must lose our life to find it. We have overestimated the value of individuality. Self-consciousness has become hypertrophied, and the *summun bonum* of life is held to be the preservation of a little puckered-up individuality. This over-development of individualism is doubtless due to the fierce struggle man has had to elevate himself out of savagery. It has been possible only through excessive carefulness and love of the ego. The struggle for existence is now taking on class and corporate characteristics, so that the common weal is an ideal quite as much as individual satisfaction and safety. Hence the exaggeration of personality may now return to something like a healthy normalism. As a natural outgrowth and consequence of this over-development of the individual consciousness, there came the absurd attempt to carry over into the after-life the same sort of existence that had been developed here,—consisting in a neglect of the actual world of one's descendants, an ignoring of death that ends the body and products of organization, and a failure to see that a future life after death must be a life of the spirit, of perfections, and of the common life, not of peculiarities and imperfections.

If this seems an aery height and a too rare air, it argues

against your preparation for the only desirable as well as the only possible kind of immortality. It argues against you just in the same way that your horror of death does. It is only participation in the divine life of the spirit that can see death as right and good. Death comes to shatter our baseless trust in the evanescent physical, and teach us dependence upon the everlasting spiritual. They dread death whose life is of the physical type. God never gave to man a greater blessing, after life itself, than death, and nothing more strikingly proves the divine government of the world than the certainty of its coming to us all. If death is your enemy, life is not your friend. The brutal attempt to ignore the fact, the belief that the body, with its pack of heathenish appetites and needs, could push through death and come out fresh and renewed on the other side is the very insanity of individualism and the intoxication of materialism. The mourning, shudder, gloom, and horror of death—God-sent if anything is—is practical pessimism and reckless atheism. Death's one lesson is that we must love and cultivate what he cannot touch. One who has lived a life of kindness and spirituality has no horror of death, and to him it has little mystery. But to him whose divinity has been self and whose religion the worship of his physiologic senses, death must be the ugliest of enemies who is to rob him of his all. Did you ever notice how life is plastic and free when first fashioning for itself a body? "All heaven lies about us in our infancy." In youth we are unselfish, aspiring, and noble. As the years go by the power of the organization, the material, grows, and limits more and more the freedom of the spirit. Frankenstein turns upon its maker. With age men get narrow, cold, calculating; women snaky, scheming, cruel. The soul finds itself more and more the slave instead of the master, and by and by when the slavery becomes unendurable, it takes flight, and this you call death. It is the body's re-

ward for insubordination. I think we deserve little sympathy for dying. Most of us have well-merited death before it comes—I speak, of course, only of the death of those in life's afternoon. Few keep the young life pliant and free beyond the age of fifty. If people could see that life is the maker and molder of organization, and if they would seek immortality upon earth, I believe men might come to live a hundred years. Trees learn to live thousands of years, but they keep youth, and spring, and trust, and love forever nestling with the birds among the rejuvenescent leaves of spring. We die not because the body is weak, but because it has become too strong. We die because there is no real continuance and strength in anything but the nonphysical, and we have trusted in the physical. Matter without free life is inert, moved only from without: the dead body is simply matter without life. It is not the blacksmith's arm that is strong: without nerve-force it cannot raise an ounce, cannot raise itself. Whence the nerve-force? From the ganglionic gray cells of the spinal cord and brain. And whence these little gray cells? The dear, stupid physiologist has now reached his limit, and you can confidently answer for him that it was Life created these things, Life that existed before muscles, nerves, and cells, and that slowly fashioned them; Life, an order of existence in no imaginable way analogous to, or to be confounded with, matter or mechanics. There is in the history of thought no more ludicrous and dismal failure than the attempt to explain life in terms of mechanics. The hope of the materialist that science would prove his prejudice is torn to tatters. The children of the spirit are amazed at the bat-blind inability to see the fact,—to see that life is more certain and enduring than matter, soul than sense. The organs of the body are changed, diseased, die; the body itself dies; generations of bodies die, but like a containing cord of silk, on which all the glittering

beads of flesh are strung, there is the soul, the life, ever the same, persisting unchanged through all change, giving unity to diversity, molding, making, discarding, choosing, healing, working to far-away ends with blind, and dead, and obstinate materials. You love the flesh over-much, and jealous life says to you, "Take it then, this so loved and wondrous flesh; me you have not loved,"—and lo! the dead body, useless, decaying, lies before you. Let no materialistic misreading of science hoodwink you into any blurring of the outlines between matter and life.* The two are as far apart as heaven and earth, are as dissimilar as thought can conceive,—perhaps, in a final analysis, are the only two things of the universe. There is no fact of science showing the faintest warrant for confounding the two. Even Huxley calls materialism the most baseless of all dogmas. It will probably be found that there is but one element, of which all others are duplications and combinations, atoms being but centers of force. But life is irresolvable into any form of matter or mechanical energy. It is not only unthinkable that matter could originate life, but it is demonstrably absurd. No scientist to-day believes in spontaneous generation. *Omne vivum ex vivo* is an axiom. The plant has no nervous system and yet has every physiologic function possessed by the human body. It has contractility, irritability, respiration, anabolism, catabolism, and reproductivity,—that is, it has spontaneous movement, it responds to stimulation, it breathes, it assimilates, it excretes, it begets its like,—and physiologically this is all you can do. Nay, more than this, even a drop of the jelly-like protoplasm that makes up the basis of all cell-structures, animal or vegetable, has also all of these

* Those who think this view is the voice of faith and not of true science may profitably read a little book that has come to my notice since writing these pages, "Life Theories and Religious Thought," by Lionel S. Beale.

qualities or powers. There are bundles of wholly structureless, unorganized jelly that exhibit these capacities in a wonderful degree. There is, for instance, *Hydra viridis*, that has no eyes and yet sees, no brain or nerves and yet lies in wait for prey, pursues and fights, or flees from danger. Turned inside out, it lives and digests its food as well as before. It holds live worms down with an improvised arm when they try to get out of its stomach. Any part reproduces all. Cut off the bottom of its stomach and it goes on eating, quite untroubled by the little accident,—and so on. A great, wise, blind man has defined evolution, or life, as the integration of matter and the dissipation of motion, during which the matter passes from an indefinite, incoherent homogeneity to a definite, coherent heterogeneity, and during which the motion undergoes a parallel transformation. Some one else improved upon this by saying that it was “a change from a no-howish, untalkable all-alikeness, to a some-howish and in general talkable not-all-alikeness, by continuous something-ifications and all-togetherations.” Schelling said that life was the tendency to individuation. But the crystal or the planet shows that, and they are not living. As the hand cannot grasp itself, neither can life define itself. All definitions I have seen miss the essential and primal characteristics of spontaneous movement. But all definitions begin by begging the question,—assuming the thing explained. The truth is that there is no definition or explanation possible. The dualism of matter and life must be accepted. There is no monism can bridge the gulf between mechanics and life. Inorganic matter with its inherent forces and laws cannot be conceived as ever coming into or as passing out of existence. From all eternity it was as it is, and so it will remain. The physical universe shows no hint of design, no glimpse of freedom, no trace of intelligence, no suggestion of a maker or God. It has no power

of choice, no spontaneous motion. But the merest speck of living matter is utterly and absolutely different. It may have eyes or no eyes and yet it sees, ears or not and yet it hears, nerves or not and yet it feels and reacts, brain or not and yet it thinks and plans, and acts in accordance with intellectual resolves. The dead body of your child is most inconceivably different from the living body of an hour ago. The one fundamental mystery of the explainable world is why life seeks objectification in material forms, and why it seeks it with such vehemence and ardor. Life seems to bite at matter as if with famishing hunger. One wonders if from some other planet life is being suddenly starved out or banished by some catastrophe, and as a consequence there is thence an over-emigration of the hungry Huns upon our earth. Certain confused and confusion-breeding philosophers in the interests of a theoretic monism or pantheism pretend to find or to believe that the organic is born out of the inorganic, that the physical world shows evidence of design, that life and mentality were implicate and latent in preexistent matter. Yet they will accept the evidence against spontaneous generation derived from the fact that if you kill all organic life by intense heat and then exclude life from without you will never find life to arise. But it is plain that in the condensation of the dust of space into suns and planets all organic life was killed in the hottest of all conceivable heat. But as the planets cool, life appears. It must have come from without, and must therefore be an universal self-existent power. Why, or how, or whence life comes to us we do not know now, but the transcendent miracle is ever before our eyes: infinitely rich and free, life is filling, thrilling, surcharging every molecule of matter to which with wondrous power and ingenuity it can gain access. It covers every thousandth of an inch of the earth's surface, dives into the deepest ocean depths, fills the air as high as the mountain tops, ever unsatisfied, ever

grasping up a million million renaissant forms, never resting, never baffled. Before this omnipresent god one stands in rapt amazement and worship. To matter, then, life first brought, and still ever brings, the power of organization, of adaptation, of spontaneous energy, and of movement. But when the death of the organization takes place, the life that preceded and formed it is not lessened or affected. When the watch wears out does it prove that the watchmaker is dead? It is more rational to suppose that the watchmaker has kept on with his work, that he has made and will make many more watches, and I therefore judge that the life of each of us, that existed before our bodies, that formed our bodies, will still form other bodies after ours. The Oriental doctrine of the transmigration of souls is not to be accepted in its crude details, but it is doubtless a great truth. It is more rational and more consonant with what we know of life, than the theory of wasted life implicate in the barbaric notion of sending numberless millions of souls to hell to do nothing but suffer useless pain, and other millions to heaven to suffer (I use the word advisedly) useless pleasure. Any theory of immortality that rests upon the assumption of uselessness and waste may be quickly set aside. Just as matter and force are indestructible, various forms of force being interchangeable, so it must be with life. There must be a conservation of life-energy just as rigid, and this truth must remake and remold the whole conception of immortality. When a mechanic force disappears in one phase, it at once reappears in another aspect. So vegetable, animal, and mental life are but different aspects of life-force, and suffer no loss when transformed one into the other, or when the body disappears altogether. And as it is the inherent nature of force never to rest, so there is no rest for life. Banishment of life to a heaven of inaction is as impossible as it is absurd.

This extension of the law of the conservation of force to

things biologic and psychic is a two-edged sword : it offers conclusive evidence of the fallacy of the materialist and believer. There is no annihilation ; your life, at death, not only may not stop but cannot stop. Life is as inextinguishable as physical force. On the other hand, this sword deals the death blow to two equally shallow fallacies of believers. Just so sure as it insures the preservation of your life, of all that is worth preservation, just so sure it denies the possibility of preserving what was bound up with and produced by organization,—that is individuality and personal identity. These things, if not entirely, are certainly largely the products of your peculiar physical and physiologic organization. Whatever is born of the flesh must perish with the flesh ; what is born of the spirit shall inherit eternal life. But the profoundest and most distinguishing rebuke is given the unscientific, puerile, selfish assumption of the waste, loss, and uselessness of life involved in the old theory of heaven and hell. When from a chemic compound you take away and liberate one element or compound radicle, does it then shoot off into space, to “flock all by itself” for eternity ? By no means ! It at once rushes into a new combination with its nearest neighbor, quickly picking up again the round of its duty and function. The curious notion that after having done work in one body, life or souls should at once rush off to some far-away star, there to sing or howl for eternity, was a childish absurdity. One wonders where even an omnipotent God could get material for such an amazing manufacture and loss of souls. The theory also forgot that logic demands that what should live forever in the future must perforce have lived forever in the past. A rope, if it have one end, must have two ends. What, therefore, have our souls been doing during the past eternity ? The truth is that, absolutely speaking, there cannot be souls, but only soul. Life is a unit, and indivisible. The tiniest bit of bioplasm

holds and represents all of life. Neither you nor it are separable from the whole. There may be education and progressive evolution of life as a whole, but there can be no individual and selfish salvation apart from the salvation of all other souls. The idea that release from the body at once releases a soul from action, duty, and the work of life, is an illogicality that could have arisen in no mind conversant with the demonstrated law of the nonwastage of force in any work of energy elsewhere. Life is never tired; it is the body that requires rest, not the spirit. The old doctrine of heaven, an eternity of laziness, was the sigh of the sluggish flesh whipped to ceaseless work by the unresting life. The desire of heaven was the desire of eternal death.

This extension of the idea of the nonwastage, the rigid conservation and interconvertibility of force to things of life, gains a new significance and grandeur when we consider that whatever proves the immortality of man proves the immortality of every other animal or vegetable form. The tree and horse have a soul quite as well as you, and must live after death quite as surely as you will. It is the flimsiest of conceits that makes men think they are endowed with a special sort of soul or divine life, different from that of animals or plants. Don't flatter yourself. God takes quite the same loving pains and care in the elimination of a leaf that he does of a brain-cell. Man is but a small part of the animal world, and the whole animal world is but a small part of the total life of the globe. Don't despise the vegetable kingdom: it can do something you cannot do—make living matter out of mineral substances. You could not live a day without the food furnished you by "your brothers, the plants." Hence if human life or souls cannot be sent off into space to do nothing, neither can the souls of animals and plants. If we are to have our heaven, they must have theirs also. Does not this tangential theory begin to be clumsy and

work with huge creakings and difficulties? It looks like *reductio ad absurdum*.

Not only is the tangential theory contradictory of all physical analogies and all known laws, but it is positively immoral, it is but a refined selfishness. Worldliness is none the less sinful because it is other-worldliness. If billions of souls could thus be wasted in an eternity of useless pain or pleasure, could thus—drunken with individuation—hug their own sweet ghosts for never-ending time, then were life a farce, the universe a huge, meaningless machine for grinding out waste and useless souls. But if all life, past or future, is one and indivisible, purposive, educational, then the world becomes full of meaning and the face of the Father, Life, smiles out at us from every living thing. The faith of all good men—that goodness is at the heart of things—is justified. The Earth becomes our home, that we can love; our Father ever dwelleth here; we cannot be banished. When we have finished our task, when our body has worn out, tireless life, of which we are the children and heirs, gives us here and now other work to do.

To matter, this tremendous cosmical game of incarnation can mean nothing. We see the dead flesh break up into simpler chemic forms and the atoms finally spin off unaltered by their flesh-dance, again to be caught up by the mystic and unseen Master, again to be pressed into organic forms,—forms that like empty seashells only show where life has been. And so on forever. But to life some educative purpose must be operative through it all. Life that made eyes must see more than eyes; life that made brains must know more than brains. There is, doubtless, pain and strain; but is there to be no ultimate justification? We may catch glimpses of reasons. Do we not see an increase both of quantity and quality of life in geologic times? Is life trying to do away with death and heredity? Are they but makeshifts, death but a discarding of too obstinate

material? birth but a retempering and reworking of the same material? heredity but the temporary means of passing life and its experiences onward until death and birth shall be found unnecessary in a growing command of chemic and physical forces that shall banish old age out of the world? There is no inherent reason why a body should grow decrepit. If it can be made to preserve its suppleness for fifty years, why not for a thousand? It may transpire that the dream of an elixir of life may come true through scientific progress despite the savage death-blow given it by Brown-Séquard. The more sin, selfishness, and wrong there is, the shorter is the average length of human lives. If you will look into the rich and awful science of statistics you will find proof of this in every class of society. When we apply ourselves to enrich and lengthen our life-time with the same zeal we now use in killing each other, when the endowments of the world's scientific schools equal the cost of the world's armies, then there will be a very different life-table found in the insurance offices.

Finally, with mournful, echoing recurrence comes the old question: How much of individuality persists and passes untouched through death's fingers? How far does the graduate life carry with it the results of experience? I would answer: All that you ought to desire, all that is best, all that you will want when you fully understand how little and poor is individuality and that there is something including it and far better. I have a strange inability, personally, to understand the, to me, absurd hunger after personal identity. It appears to me a childish obtuseness of character. The great and glorious freeness and largeness of life, the decentralized, impersonal quality of it, seems to be unappreciated. I do not see how people can fail to understand that personal identity is not only impossible, does not exist now and here, but that the desire of

it is the renunciation of progress. We grow and advance only by change, only by breaking up identity and becoming other. Think also of the lack of identity or individuality in nature. There is no personality and individualism there, and yet there is something that includes personality and is much more. There is will, consciousness, intelligence, life,—but not identity or individuality. So the life that is the heart of us invites us to leave our little self and find a larger self. Religion is our *yes* to that invitation. Materialism and pessimism is the saying *no* to it. The immortality that is alone possible or desirable is the losing our life, the individual identity-loving life, again to find it as the impersonal but richer, deeper life of nature and God. God denies you an immortality of individualism and identity because He loves you so well that He refuses you your crude, childish desire in order to offer you something infinitely better. People do not seem to see how narrow, small, and partial is the dissociate speck of the individual, and that as an individual progresses in all the virtues of character he evermore becomes proportionally less individual and less centralized, always more like the divine prototype of his impersonal father, Life. The love of individualism is the love of imperfection. This may to some seem a hard doctrine. It is not perhaps an easy task for the butterfly to break its way out through the million-fold bonds of its cocoon, but when risen into the large air and sunshine does it regret the birth-struggle? They who think they are being cheated of reality for a metaphysic illusion will find, in breaking through the bonds of flesh, that they also have brought with them splendid wings for rising in the no less real but rarer air of spiritual trust in life. It is not that we love less the thousand ties of flesh, home, and kindred, but that in recognizing the paternity and fraternity of all life, we find love commensurate with that life. I do not think there was any cold, stony harsh-

ness in the face of Jesus when He uttered those most profoundly significant of all words, "Who is my mother, and who are my brethren? Whosoever shall do the will of my Father, the same is my brother, and sister, and mother." What a recall to the common life of the spirit! What unity with the common life based upon loving obedience to the will of the Father. What a wonderful rebuke of the love of individualism. He did not love His mother less, but humanity more. The more we rise into that impersonal atmosphere the more are we careless of the fate of personal identity. The composite photograph shows the fundamental and enduring quality, the average feature. In a certain sense life and history are taking humanity's composite photograph; but, inordinately loving individualism, each sitter conceitedly demands that his own picture be left untouched and unblurred by that of the others, and that his poor little portrait shall stand alone and forever—precisely what the divine Photographer does not wish and will not permit. Obstinacy persists and God smashes the negative to the ground with the unanswerable argument called death. Because it is more than metaphor that in many ways the body may be likened unto a photographer's negative,—created, for example, by the in-flashing of a heavenly ray of light among the highly unstable chemicals of matter; useless, except as an intermediate step to a clearer showing of the character; black and invisible, unless shone through by the pure light of life and love; fragile as glass,—and lastly, the poor, weak, shadowy, dead counterfeit of a throbbing, marvelous, living reality. The hunger for an immortality of the body, of the senses, the lust of immortality, is, in empty fatuousness, only comparable to the mania of a crazy photographer interested only in his negatives, and who never "develops" one; or to the foolishness that values photographs more than the friends themselves. If we once get our spiritual eye fixed

upon the deep reality and unity hidden by the Maia-veilings of individuality and flesh, the cravings of our weak hearts for eternal continuance of our little bundle of littlenesses would fall away from us as softly as the wayward longings of childhood. We could then see that it is the quality of all life, the progressive purity, power, and increase of life in the abstract, that become all-important. Religion would become the love and veneration of Life the Father of us; morality the cheerful obedience of the individual to that Father; Heaven the reentrance of the individual life into the great unity. Much of the old religion was irreligious; its God a far-away, dead abstraction, not a living, ever-present love; its immortality was at heart a desire for death, its spiritualism at heart a barbaric materialism. To this death of faith and irreligious religion comes the sympathetic study and love of nature—that is, science—and reveals to us the opulence of life, the infinity of intellect in nature, the inexhaustibleness of her resources and of her diversity, her beauty and her splendor. The old materialistic degradation of religion forfeit its doom would come from this spiritualistic revivification, and the devotees cried out against science as atheistic. And science found some foolish enemies in her own camp who, misreading their divine book, joined in the cry—"Nothing but mechanics." It was a dismal, short-lived croak. We now see that not only are science and her workers religious, but without scientific knowledge there can be no adequate idea or practice of religion. You can't love God unless you love and know what He is doing in this universe. The man who in a walk goes neglectfully and obliviously by a million mysteries and wonders that God has been toiling to eliminate for ages,—such a man cannot lay much claim to God's friendship. If we love our friend, we have some interest in the deepest concern of his life. The foolishhest of all fears is the fear that science is somehow going to

destroy all good things of faith and life. In truth, it reveals all good things. It demonstrates and manifests both God and immortality,—God as the Father of all life, immortality as the surety of the conservation and nonwastage of that life. Much of the fear of science is, as I have said, the fear of the old materialistic religion in presence of the larger faith that burns up its beloved errors. They who had been promised and had argued themselves into a groundless belief in the value and immortality of a bundle of sensual appetites, selfish desires, and imperfections, saw far in advance that any large study of life and nature would dash their wretched faith to atoms. And science has over-ridden this unfaithful faith. "He that soweth to his flesh shall of the flesh reap corruption; but he that soweth to the Spirit shall of the Spirit reap life everlasting." This is as true scientifically as it is true morally and religiously.

It required but a little study of neurology and psychology to give demonstration to this truth. The products of organization die with disorganization. Most, if not all, of what people mean by individuality and personal identity is a product of organization, is an accident of incarnation. Children are similar to each other; they are lovable partly because idiosyncrasy and individualism haven't yet developed. As we grow older we cultivate individuality, until the very old are usually angular, cranky, individual with a vengeance! Death, thank heaven! is the end of that, the certainty of a noneternalizing of the imperfect. Birth is a new trial. Incarnation and reincarnation are the ever-renewed work of Life. Through the laws of heredity, through physiology, sociology, and biology, science is tirelessly illustrating to us how all life holds together, how individualism is valueless, and sacrificed to the common weal. There is no escape, sensual or super-sensual, from the world's great common life. The old, selfish dream of a heaven apart from incarnation, from

doing and becoming, was a pitiful mistake. You cannot clutch your cake of happiness and like a spoiled child run into the attic of heaven to eat it alone. Life will see to it that you do not slip off. And if you have been born again of the Spirit you will have no such desire, but will beg for kindred work upon the old earth-home.

In the meantime the conclusion is clear: to love and aid the work of our master Life we need not wait for death. We may not seek our own salvation; it is no matter whether you and I are saved or not. The reincarnation of life is our work here and now. It took you twenty years to fashion out of a microscopically small speck of unorganized protoplasm your body and brain. Within us we are to keep that organization from cramping and binding the life,—keep life as large and free and pliant as possible. Outside of us the incarnation goes on as well, and every person you influence either for good or for ill, thus by the fact becomes a product of your incarnating work. Every day you have a hundred opportunities to give, without lessening your own supply, some of your own life, to increase the quantity and to elevate the quality of the general stock of the world's life. Help the young; they inherit the world and will use it well or ill according to your teaching and example. Stop cruelty to animals; they are your brothers, filled with the same life as your own. Fight the political ruin we are preparing for ourselves by partisanship, bribery, and class-legislation. Discourage war and intemperance, and lessen the tyranny of the strong and wealthy. Wage a ceaseless war to the death against luxury, the poison that is eating and rotting the hearts of all of us. Love trees, meadows, clear brooks, the mountains, and silences of Nature. Love, not so much your own or another's individual life, as Life itself. There is otherwise no immortality.

The divine story tells us that after measureless suffering and self-purification, Buddha had gained the right to enter

Nirvana. With compassion filling his heart he put his merited reward aside and resolved to remain without to teach and to help until every child of earth should have become his disciple, and until every disciple should have entered Nirvana before him. Such must be the resolve of every true lover of life and of every right seeker after immortality.

The Meaning and The Method of Life.

A SEARCH FOR RELIGION IN BIOLOGY.

BY GEORGE M. GOULD, A.M., M.D.

New York: G. P. Putnam's Sons, 1893. 297 Pages. Price, \$1.75.

EXTRACTS FROM REVIEWS.

In strong contrast to all this is the genuine biologist's religion set forth by Dr. Gould in the book before us. To begin with, it is truly a religion, and no sham. Whoever believes anything like it must, no doubt, be filled with the spirit, if not of worship, yet of devotion, hearty, tender, and passionate; and for how many confessions can we say as much? Next, whether we accept the doctrine or not, we cannot but grant that it does truly spring, by methods of thought analogous to those of natural philosophy, out of observations of nature. Insisting upon the absolute distinction between living and lifeless things, Dr. Gould sees in the former an invisible Life, purposeful and intelligent. This is his God. He names him *Biologos*. He is a regular Aryan nature-god, very wise and clever, but existing in nature, not the creator of matter, and very far from being omnipotent.

Dr. Gould believes in his God without one shade of doubt, and with a fervid joy that would render his book delightful reading even if it were not filled with interesting suggestions gracefully and strikingly expressed. He really makes his doctrine decidedly attractive, at least for some of our moods.

It is little to say that there must be some truth in Dr. Gould's idea if there is any truth in religion; for every religion worthy the name represents a struggle between the God and some dark and baleful resistance.—*The Nation*.

It is this directness of experience, this presence of a truly passionate interest in the subject, which makes our author's work fascinating, and which ought to make it valuable for many who will not accept Dr. Gould's conclusions in his own form. These conclusions, as here stated, are embodied, indeed, rather in an excellent cosmical romance than in a reasoned philosophical doctrine. But cosmical romances are works of art that few can write, and the good cosmical romance is a fiction that is sure to veil a deeper truth than perhaps its own author imagines, especially if he himself takes his legend to be literally accurate.

In setting himself this task our author appears as one well equipped with empirical illustrations derived from the biological sciences. His acquaintance with a considerable mass of them is as close and fresh as his own inner experience of life. It need not be said, however, that this empirical material is here used, not technically, nor in the service of science for its own sake, but rather

by way of illustrating the general cosmical hypothesis. The latter, meanwhile, is itself presented with all the naïve and charming immediacy of a divine intuition. One does not prove this intuition; one simply sees its truth.

Our author is, above all, ethical in his concern, and feels precisely that opposition between the ethical and the all-powerful characteristics in the God of tradition which has so divided in twain the religious consciousness of the ages. The worth of the present intuition lies, then, in the fruits that spring from it. And there is something delightful, as one reads Dr. Gould's glowing pages, in watching this fervent student of current medical and of general biological lore, who, inspired by a moral devotion, "sees," "under the microscope," the workings of a God whom he now has to conceive with attributes quite pathetically, yes, tragically, human.

The air of what we have called "unique experience" in this volume can be but faintly suggested by such a review. These propounders of intuitions will always be welcome guests in philosophy.—*Professor Josiah Royce, of Harvard University, in the International Journal of Ethics.*

We differ from the author so radically in one of his most important philosophic premises, we agree with him so heartily in his ethical conclusions, and, moreover, we admire so sincerely his earnest, whole-souled, vigorous style, his reality and loftiness of purpose, that our critical faculty is paralyzed.

In the living cell, the finite, powerful, but not all-powerful God, whom Dr. Gould terms *Biologos* (*βίος*, life; *λόγος*, the world), becomes incarnate. In every living cell is God bodily present, and slowly, painfully through the ages, Life struggles with matter; sympathy, pity, love, struggle with the mechanical regularity of the inanimate universe.

Biologos gains for himself new footholds, he advances from "strength to strength," as higher forms of life appear. At last, man, the nearest approach to God, is evolved, and every man becomes God's deputy to push his conquests over matter further, and finally to establish his kingdom of love. Evil exists, not because God wills it, but because God's power to prevent it is limited. Or, rather, evil is the result of the imperfections of the development of the creatures of *Biologos*; it is but another name for the obstacles unconquered; the obstacles inherent in dead, mechanically-governed matter.

From this and other scientific data, interestingly and forcibly set forth, the author develops a practical creed of highest value. We are all the sons of God, all His servants to conquer evil. Life is real and holy; its method is given by science, its meaning by a direct inspiration from *Biologos*. The author vigorously denounces all forms of selfishness, cruelty, pretense, and hypocrisy, and shows wherein lies the true, noble, sincere, and loving use of God's gifts. Sympathy with and respect for all other life are its foundations.

To the thousands who, like the author, find traditional roads impassable, his book will doubtless be a comfort and an inspiration. To all, it will prove a source of spiritual elevation; for it breathes an immediate consciousness of God's existence, rare indeed in our modern literature.—*The American Hebrew.*

A very active-minded and suggestive work. The author seems to have passed through a prolonged period of atheistic thought, and to have worked his way out by great mental suffering to a vision of God in all life. His style is vigorous and clear, his observation is close and connected, and his views are decidedly original.—*Public Opinion, Washington, D. C.*

The ability and sincerity of the author will yet commend his volume most to the most philosophic minds, who incline to believe agnosticism as far from the truth as gnosticism.—*The Literary World, Boston.*

We consider it an important contribution to the scientist-theological literature of the day.—*The Bookseller, London.*

The writer seeks to give the key-note to the riddle of life. The peculiarities, course, accidents, and evils of life he seeks to explain. In many respects the idea sought to be established is the same as that wrought out by Drummond in his work on God in the material world. Each takes the phenomena of the world as observed, and shows how a divine power works through the observed material to attain the ends to be accomplished.

Perhaps the chapter on cytology, or theology of the cell, will attract most medical minds. Cell physiology and pathology are accepted as fundamental elements of medicine.

The work will interest all who desire to increase their knowledge as to the meaning of life.—*American Lancet.*

In every chapter much will be found to help the willing soul longing to be free so as to know God, aware that in this knowledge is perfect freedom, and unaware that He Himself is in us, of us, and about us—for "in Him we live and move and have our being."—*Book News, Phila.*

The volume is an acceptable contribution to the solution of the problem of life. It is deserving of careful examination, and may confirm many a mind in the same grooves of thought which his chapters in some respects clearly set forth.—*The Transcript, Boston.*

About the earnestness, the high ethical purpose, and the great ability, on his own lines, of the author of this remarkable work there can be no question.—*The Christian World, England.*

Its motto, "From life, through life, to life," gives the key-note of its tone—one of cheer and encouragement—a refreshing contrast to the philosophy of pessimism and despair, so prevalent for many years past in works assuming to be guides of scientific thought.

One of the greatest merits and clearness of the book is its manly and vigorous protest against the crying evils of the age—its rampant materialism, its suicidal love of luxury, gross sensualism, ever-increasing inefficiency and self-indulgence.

We hail it as an omen of good in our future progress toward the light—an important link in the chain of evidence binding earth to heaven. We would urge the intelligent and earnest general reader not to be deterred by the technical phraseology of many of its passages from a careful perusal of the entire work. It will amply repay him for the effort. It will leave the impress for good on both heart and mind, enlarging the views and broadening one's sympathies with all things stamped with the image of the all-loving Father.—*The Times, Richmond, Va.*

It is a work worth careful study, and while at a cursory glance it may appear dull, one has only to read a few pages to realize the wealth of thought contained between its covers.—*The Herald, Rochester, N. Y.*

Dr. Gould's work is a sincere and enthusiastic endeavor to bring vividly before the mind the evidences of God's existence and the method of His activity apparent in the world of living things. He takes for his mottoes, "From life, through life, to life," and "the Word became flesh," of which this volume attempts to be an exposition.

In attempting thus to indicate the spiritual principles underlying the world of nature, Dr. Gould's book may be considered as in some sense a counterpart to Drummond's exposition of the natural law in the spiritual world.—*The Press, Burlington, Vt.*

At the present moment there is no question of a purely theoretic character which so profoundly agitates thinkers as that which has reference to a reconciliation of the traditional faiths of mankind with the startling revelations of scientific investigation; and Dr. Gould deserves sincere thanks for the able and scholarly way in which he here meets the issue and clears the ground of encumbering side questions and logical impediments.

Dr. Gould speaks as a scientist, but always as one whose ear has been sensitive to the still, small voices of nature, no less than to the utterances of her unalterable laws.—*The Bulletin, Phila.*

The book is one of deep thought, the product of unwearied study of life itself and the most intense and genuine conviction, and will well repay the reader.—*Book News, Phila.*

These somewhat startling theories will doubtless expose the author to acrid criticism; but they should acquit him of the sin of mental plagiarism, for they are the unique product of his own brain. That circumstance, however, should not deter the reader from dipping into the book, because, though it is full of strange conceits, it contains much that is suggestive and interesting. The author is plainly a man who has brought to bear a cultivated intelligence and a thoughtful and inquiring mind on the problems of the here and the hereafter.—*New York Tribune.*

It is a matter for congratulation that here and there is to be found a man who will put aside his desire for the fame that the many might give him, and seek for his reward in the appreciation of the few. Dr. Gould has studied the facts before him in his search for religion in biology, and has written a really entertaining book.—*Post, Chicago.*

When the reader has got through with this book he will admit that Dr. Gould has not made his search for religion in the realm of biology wholly in vain. For apologetic purposes the work will be found highly useful.—*New York Christian at Work.*

Dr. Gould has attempted to discover the secret of nature and of human life. He brings to the task intelligence and skill. We have read his argument with sympathetic interest, and, although it seems to us inadequate, it has a peculiar poetic power of fascination. The argument tends toward the faith of optimism; and, although it leaves us with a dualism that cannot be resolved into unity, it is in the direction of a sane and sound explanation of the universe.—*The Christian Register.*

His work is evidently sincere, the result of persistent study and the effort of a candid and truthful mind. His volume is an indication of the longing everywhere evident to reconcile the essentials of the old faith with new knowledge; if the effort is incoherent it is at least resolute and genuine, and deserves the consideration that should always be accorded to honest endeavor.—*The National Baptist, Philadelphia.*

The work is that of a writer who knows his own mind and has no hesitation in combating received opinions which seem to him erroneous. It is a scholarly, incisive work.—*Detroit Free Press.*

We recognize the ability and learning, the sincerity and suggestiveness, of the volume.—*Zion's Herald.*

